D 101.52/3:2/9

UNIVERSITY OF FLORIDA LIBRARIES SEP 1961

ARMY RESEARCH AND DEVELOPMENT

MONTHLY NEWSMAGAZINE OF THE OFFICE OF THE CHIEF, RESEARCH AND DEVELOPMENT
Vol. 2, No. 9 SEPTEMBER, 1961 • HEADQUARTERS OF THE ARMY • Washington 25, D.C.

DD (R&E) Forms Advisory Group on Electron Devices

Director of Defense Research and Engineering Dr. Harold Brown gave his approval, in a Department of Defense Instruction dated Aug. 7, to the establishment of an Advisory Group on Electron Devices.

Purpose of the Group, tentatively scheduled to begin operations Nov. 1, is to provide technical advice "which will assist the Director, Defense Research and Engineering, and the Military Departments in planning and directing adequate and economical research and development programs in the area of electron devices."

As defined in the instruction, the AGED's field of interest "shall encompass all phases of research and development of electron devices (active and passive microwave devices, high and lower power nonmicrowave

(Continued on page 4)

Senate Confirms Dr. Larsen for Top R&D Post

Minnesota's delegation of dignitaries in Washington—termed second in size and importance only to that of Massachusetts under President Kennedy's administration—has been enlarged by appointment of Dr. Finn J. Larsen as Assistant Secretary of the Army (R&D).

Forty-six-year-old Dr. Larsen was Vice President in Charge of Research for the Minneapolis Honeywell Regulator Co. until he accepted the position vacated June 1 by Richard S. Morse. Dr. Larsen served from July 6, until

(Continued on page 5)

Dr. Finn J. Larsen
Assistant Secretary of the Army (R&D)

Authors Given Deadline On Narrative Summaries For Science Conference

Scientists and engineers engaged on in-house tasks and desirous of reporting on their work at the 1962 Army Science Conference are required to submit narrative summaries of proposed papers by Oct. 10.

Approximately 500 senior scientists representative of the Technical Services, other Army R&D activities and various Government agencies are expected to assemble at the fourth Army Science Conference, scheduled June 19-22 at the United States Military Academy, West Point, N. Y.

Based on the response to the call for narrative summaries for the 1959 Conference, about 500 authors are expected to meet the Oct. 10 deadline. Technical Service Chief Scientists will evaluate the proposals and select approximately 100. Authors selected to prepare papers will be notified by Nov. 17.

Personnel employed by the Technical Services must submit their narrative summary to the appropriate Technical Service Chief. Proposals

(Continued on page 6)

Featured in This Issue

Dr. Harold A. Zahl, Director of Research, U.S. Army Signal Research and Development Laboratory, looks back on his rewarding experiences during 30 years as an Army Career Scientist and discusses problems of keeping top quality in-house scientists and engineers in an article the Newsmagazine staff feels privileged to publish. See page 20.

Theme of the Month

By Major General F. S. Besson, Jr.
Chief of Transportation, DA

President Kennedy recently directed the Army to "Improve Its Tactical Mobility in ANY Environment." Translating words into deeds, the Army is developing tactical mobility equipment for limited wars. Such "brushfire" conflicts are not likely to be fought at the junction of super-highways, nor near the sites of modern ports, airfields or rail centers. Mobility "hardware," capable of operating in the air or over beaches, deserts, swamps and snow, is essential to accomplish the President's directive of improved tactical mobility in *any environment.*

Amphibians strengthen one of the weakest links in the mobility chain—the point where the ocean meets the shore. In past wars, soldiers, with one foot in the water and one foot on land, transferred cargo from floating to land vehicles on a crowded beach. In the future, even more than in the past, such beach congestion is flirting with disaster.

The Army intends to keep the beaches clear with its new amphibians. The three vehicles comprising this family are the 60-ton BARC, the LARC–15, and the LARC–5—the numbers in each case indicating the lift capacity in tons.

The BARC is a standard item and limited quantities are already in use. The LARC-5 has also been type classified and the initial production contract has been awarded. Rounding out this family is the LARC-15. This latest amphibian is being tested, and will probably be adopted in the near future.

The LARC-5 contract is an example of an excellent Research and Development schedule. The initial IDEA came in January 1958; the development contract in June 1958; engineering tests one year later;

(Continued on page 2)

Army R&D Newsmagazine

Vol. 2, No. 9 SEPTEMBER, 1961

Published monthly by the Army Research Office, Office of the Chief of Research and Development, Department of the Army, Washington 25, D.C., in coordination with the Technical Liaison Office, OCRD. Grateful acknowledgment is made for the valuable assistance of Technical Liaison Offices within the Technical Services and the U.S. Continental Army Commands. Publication is authorized by AR 310–1, dated 15 May 1956.

Objectives of this publication are: To improve informal communication among all segments of the Army scientific community and other Government R&D agencies; to further understanding of Army R&D progress, problem areas and program planning; to stimulate more closely integrated and coordinated effort among the widely dispersed and diffused Army R&D activities; to maintain a closer link from top management through all levels to scientists, engineers and technicians at the bench level; to express views of leaders, as pertinent to their responsibilities, and to keep personnel informed on matters germane to their welfare and pride of service.

Picture Credits: Unless otherwise indicated, all illustrations are by the U.S. Army.

Submission of Material: All articles submitted for publication must be channeled through the technical liaison or public information officer at installation or command level.

By-lined Articles: Accuracy and relevancy of contents of this publication to accomplishment of the Army R&D mission are of constant concern to the editors. Primary responsibility for opinions of by-lined authors rests with them; their views do not necessarily reflect the official policy or position of the Department of the Army.

Newsmagazine Subscriptions

Public sale of the *Army Research and Development Newsmagazine* is authorized through the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. Single copies sell for 20 cents. Subscription rates (12 copies annually) are: Domestic (including APO and FPO addresses), $2.25; Foreign, $3.00.

Theme of the Month

(Continued from page 1)

type classification in July 1960; the first production contract in June of this year; and delivery to come in April 1962. Four years from IDEA to DELIVERY is first-rate scheduling!

These amphibians give the Army a far greater capability in over-the-beach operations. In any future operations overseas, the Army will be able to carry a full division load from shipside over the beach to inland destinations without stopping at the water's edge.

Beyond the shore other equipment takes over where amphibians leave off. The name GOER has been applied to new 8- and 16-ton cargo carriers and a 5,000-gallon tanker. The Rolling Liquid Transporter hauls fuel inside tires 5 feet high, 2½-feet wide, and places the fuel where it is needed. The Overland Train, with a control car and a string of 15-ton capacity trailers, seems almost to float on its giant low-pressure tires. These vehicles can operate off-the-road, in difficult terrain, and in a rigorous environment.

Of course, the mobility of conventional vehicles is also being improved. One step forward is the so-called Sand Tire, or more properly the Off-Road Tire, which possesses superior mobility in mud, soft soils, and snow. The tires resist rock bruising, and their cushioning effect reduces vehicle maintenance.

Though the Army is improving its ability to move on the ground and across beaches, the greatest opportunities are in the field of air mobility. The Army is developing air systems with aircraft which will become an organic part of ground operations. It is therefore concentrating on aircraft that can live in the mud with the troops, fly over the nap of the earth, take off in a meadow and land in a clearing.

The MOHAWK serves as the eyes of the commander and is a skyborne platform for side-looking radar and photographic equipment. The CARIBOU has a 3-ton payload, can carry 24 "fully equipped" soldiers and operates from rough airfields. The IROQUOIS is a small turbine-powered troop-carrying helicopter which is fast, maneuverable, and can operate up front.

The largest Army helicopter will be the CHINOOK. This turbine-powered "chopper" has a 3-ton payload and rear ramp for ease in loading and unloading cargo. It is designed to carry a missile system or two fully equipped squads of infantry. It can land where no airfields are available. In spite of some setbacks in testing, the Army will begin delivering these big helicopters to troops in 1962.

At the opposite end of the range of air vehicles is the new Light Observation Helicopter, (LOH). This aircraft will eventually replace two light helicopters and one small fixed wing plane now used by the Army. A dozen aircraft companies participated in a design competition, and contracts will soon be let to produce test models of the most promising designs. If successful, the LOH will do a better job than the craft it is replacing, and will simplify production problems and maintenance.

Looking to the future, the military services are exploring several promising fields. These visions on a far-distant horizon may be like mirages, which disappear as we approach them. But not everything seen from afar is a mirage. Some of these visionary projects may be the basis of future military mobility.

Some enthusiasts feel that the application of ground effects phenomena may prove to be as monumental a development as the invention of the wheel. The ground effects principle is based on building up a cushion of air between the ground and the bottom of an object. The object then skims the ground, riding on its imprisoned air cushion.

GEMs (Ground Effects Machines) may serve many purposes. They may be high-speed amphibians which can carry troops and equipment across shorelines. They may turn river beds, whether dry or with deep water, into highways. Minefields are no menace to GEM troop carriers, and hostile submarines would not detect giant GEMs operating at high speed just above the waves.

The military services are a long way from believing that the GEMs will relegate most of our present mobility hardware to a museum of antiquities, but they believe that the GEM field is worth exploring. The Army and Navy have 20 joint contracts investigating GEM applications and are interested in the posibility of developing a 15-ton capacity GEM transporter.

Another visionary project is the Paraglider. The Army has a research contract with Ryan Aeronautical Company of California. This kite-like glider is a giant version of paper-dart planes so popular among school children. The Paraglider can be controlled aerodynamically and may be used in controlled air drop of soldiers, weapons, vehicles or fuel. It may help surface vehicles leapfrog over obstacles or it may tow supplies to a battle zone.

One of man's oldest and at the same time newest dreams is to fly like a bird. The Army has a research contract for an individualized flying belt. A test engineer has made more than 30 experiment flights, ranging as far as 400 feet. The present "Buck Rogers"-type belt is built out of readily available components and consists of a fiberglass rig fitted to the flyer's back and hips. Hydrogen peroxide, the source of power, is changed to steam in a gas chamber.

GEMs, Paragliders and Jet Belts must still prove themselves. The essence of progress is practical research and development and realistic production schedules. Imagination has many virtues, but it must not distort down-to-earth judgment. Yet there is still a kernel of truth in the R&D adage, "if it works, it's obsolete." Exotic projects of today may become commonplace tomorrow.

Examples of New Developments in Army's Drive to Improve Mobility

(See Theme of the Month, page 1, by Maj Gen Bessen, Chief of Transportation)

Figure 1 shows troops debouching from mock-up of HC-1B CHINOOK, latest addition to Army's helicopter family, which cruises at 130 knots. In figure 2 troops move ashore with dry feet from BARC (Barge Amphibious Resupply Cargo), which can carry 60 tons of cargo or 200 troops. The AC-1 CARIBOU, shown in figure 3, can operate from airstrips 800 to 1,000 feet long, transport 30 fully equipped troops. Pictured in figure 4 is the HU-1B IROQUOIS, already in quantity production, which is to be used almost exclusively at the front. With modifications it can carry up to 11 passengers. The third of the Army's new amphibians, the LARC-15, figure 5, with a capacity of 15 tons, is now being tested and probably will be adopted in the near future. An exciting mobility prospect is seen in ground effects machines (GEMs), intended to skim over land, water, swamp or snow; the one shown in figure 6 is undergoing testing and experimentation at Fort Eustis, Va. A 4-passenger vehicle it is designed to travel up to 35 m.p.h. on a 6- to 12-inch cushion of air. Figure 7 shows the GOER, cargo carrier with a capacity of 8 and 16 tons. The Transportation Corps, seeking increased off-road capability for its Truck Companies, is participating in the development program of the Ordnance Corps GOER.

Chief of Staff Emphasis on Suggestions Program Returns Phenomenal Dividend

Outstanding success of the "Chief of Staff Suggestion Month" in May 1961 was due in substantial measure to the response of military and civilian personnel in Army Research and Development installations, a tabulation of results in late August revealed.

More than 240,000 suggestions were submitted in May, exceeding the total for all of FY 1960 and surpassing all previous efforts of any Federal Government agency for a like period, an Army Suggestions Awards Program official said.

Full benefits of the large number of new ideas proposed as a direct result of the emphasis on economy and improving operations by General George H. Decker, Army Chief of Staff, will not be realized until they are processed, probably extending over a period of several months.

Indicative of the success of the program is the estimate that first-year savings from suggestions adopted during FY 1961 amounted to $16,660,000. The big drive in May contributed to a FY 1961 total of 188,816 suggestions from civilian employees and 175,252 from military personnel. This compares with 97,784 civilian and 41,774 military suggestions in FY 1960.

Figuring prominently in the overall Army results were all of the Technical Services and other Army R&D activities, an awards official said. While the Quartermaster Corps established the best year-long record, the Ordnance Corps with more than 23,000 suggestions in the year-end quarter and the Engineer Corps with over 16,000 in the same period achieved the most significant gains during the May campaign, the official said.

The "Chief of Staff Suggestion month" was the latest in a series of efforts to obtain the full benefits of the imagination and knowledge of Army personnel in finding more efficient ways to accomplish the Army mission. In 1960, "Operation Searchlight" proved the value of asking Army personnel to work out new approaches to specifically identified areas.

WSMR Workers Submit Money-Saving Proposals

Civilian and military workers at White Sands Missile Range, N. Mex., saved the U. S. Government almost $4 million dollars during the 1961 fiscal year under the Army's beneficial suggestion program. They earned $100,000 in performance awards.

One suggestion alone by Otto Thiele, Signal Missile Support Agency meteorologist, will save the U.S. taxpayers more than $3 million (estimated). He has been recommended for a $4,100 cash award. His idea to eliminate the high failure rate of the Loki Phase IIA meteorological sounding rocket was considered highly applicable. Field tests of his recommended technique have resulted in a high percentage of successful flights.

Modification of the Loki-Dart Sounding Rocket system should salvage 280 of these rounds at the cost of $800 per round, resulting in a saving of $224,000 plus the $3 million in range time, a WSMR official said.

Approximately 30 percent of the suggestions submitted were adopted. Cash awards ranging from $10 to $475 grossed $10,075 to SMSA and Ordnance personnel. During the past year the total of 3,349 suggestions topped all previous records, exceeding the total for the past three years.

In May, designated as the Army's Chief of Staff Suggestion Month, 2,109 suggestions came pouring into the WSMR civilian personnel office in comparison with 1,240 during the other 11 months of FY '61.

A total of 7,060 years on the job with Uncle Sam were represented by 584 career service awards which were presented. Sustained superior performance ratings were awarded to 297 White Sands personnel and 20 Special Act or Service Awards made.

Mrs. Eugenia Lane, who heads up the White Sands Incentive Awards Branch, said the military came to the front with many good ideas during the recent campaign. The Stallion Range Center detachment is credited with suggestions from 81 percent of its average Morning Report strength, and the unit was cited for enthusiastic support of the program.

DD (R&E) Establishes Electron Devices Advisory Group

(Continued from page 1)

devices, special electron devices and conventional passive devices). . . ."

In pursuit of its stated function, the Advisory Group will, among other things:

- **Survey and evaluate electron device research and development programs, both within and outside the Department of Defense.**
- **Review and evaluate for the Director, Research and Engineering, proposals, projects and programs in its field of interest, including those pertaining to the Mutual Weapons Development Program.**
- **Provide technical advice on a continuing basis to the Director, Defense Research and Engineering, regarding long-range supporting research and development programs for the Department of Defense, with particular attention to programs which will reduce the lead time required for the development of devices to meet future equipment and systems needs.**

The instruction further states that in the execution of its functions, the Advisory Group on Electron Devices will operate under the supervision, administration and control of the Director, Office of Electronics, ODDRE and in accordance with established ODDRE policies.

The AGED, in its review and evaluation of the electron device program, will "give special attention to projects and programs of particular significance; for example, those in new areas or those requiring large expenditures of effort . . . and will maintain on a continuing basis a detailed long-range supporting research program for electron devices."

The Group is authorized to establish working groups or ad hoc groups as may be required, subject to the approval of the Director, Office of Electronics, ODDRE. It is instructed to "maintain liaison with other groups and agencies, both within and outside the Department of Defense, in arranging effective liaison."

Six working groups are contemplated at the outset of operations,

Dr. Harold Brown
Director of Defense (R&E)

dealing in the fields of (1) Microwave Devices, (2) Low Power Devices, (3) High Power Devices, (4) Special Devices, (5) Conventional Devices, and (6) Planning and Requirements.

Each of the three Military Departments will assign a member and a deputy to each of the working groups. One or more members may be designated from the Office of the Director, Defense Research and Engineering, in addition to which agencies of the Department of Defense and other agencies of the Federal Government may nominate representatives in appropriate numbers.

The Advisory Group on Electron Devices will activate its program in this area when its predecessors, the Advisory Group on Electron Tubes, and the Advisory Group on Electron Parts, are phased out Oct. 31.

The AGED task is to be accomplished by a tri-service supported, Signal Corps administered contract with New York University to maintain a group at 346 Broadway, N. Y. 13, N. Y., charged with the responsibility of acting as the technical and administrative secretariat of AGED. Correspondence that otherwise would have been addressed to the AGEP Secretariat in Philadelphia should be addressed to the New York address commencing Oct. 2.

Army to Dedicate First 'Pulse' Atomic Reactor Oct. 17

Dedication of the Army's first "pulse" type atomic reactor, capable of emitting bursts of radiation that simulate those of an atomic explosion, is scheduled Oct. 17.

The underground reactor building is situated on the grounds of the Army Walter Reed General Hospital's Forest Glen Annex, Md. Expected "to go critical" Aug. 31, it will be turned over to the Army Oct. 21.

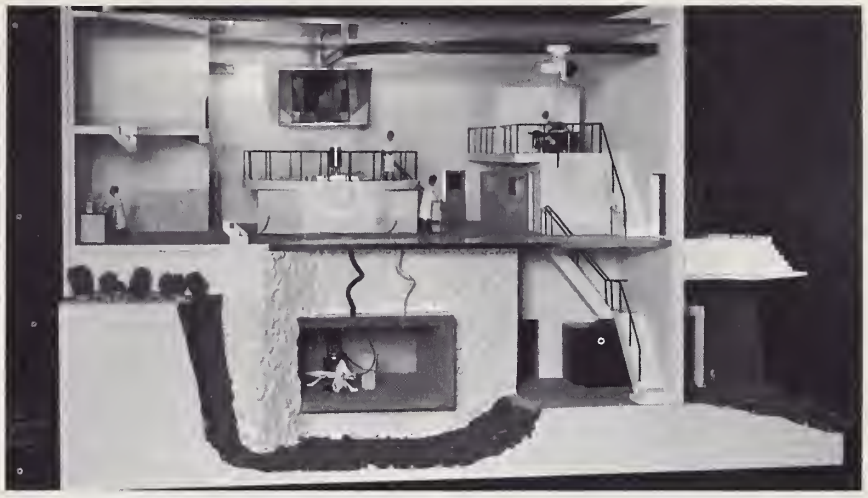
The unit will be manned and operated by personnel of the nearby Diamond Ordnance Fuze Laboratories. Walter Reed Army Medical Center will provide health physicists needed in the operation of the facility, and will share its use with the Army Ordnance R&D program personnel.

The prime purpose of the reactor is to enable the study of transient radiation effects on electronic devices and systems, to learn how they would stand up under atomic attack.

The pulse-type reactor, which is distinct from a power type, has been designed specifically to build up to a high level of radiation for a pulse, or burst, approximating an atomic blast lasting only 10 milliseconds. A foolproof system of automatic turn-off or shutdown is built into the core, making impossible runaway generation of atomic power.

The reactor's core is in a pool of water 17 feet deep within the underground reactor building.

The construction agreement between DOFL and the General Dynamics Corp. provided approximately $1,050,000 for the project.



Cutaway model of underground "pulse" type nuclear reactor to be turned over to Army next month. Reactor's core is shielded in pool of water.

Two Atomic Clocks Installed At Huachuca Proving Ground

Atomic clocks that may not vary as much as one second in 3,000 years have been installed at the Army Electronics Proving Ground, Fort Huachuca, Ariz.

Principal function of the two Atomichrons is to provide standard frequency and a time base at Greely Hall, Fort headquarters.

The National Co., Inc., which delivered the 500-pound clocks, explains that the Atomichron derives its exceptional accuracy from a frequency stabilizing system in which the unvarying resonance of the cesium atom corrects the frequency of a crystal oscillator. This adjustment continuously and automatically compensates for both secular and random frequency fluctuation of the oscillator.

Installation of the two atomic clocks completed a $1 million contract for seven of the devices. Four were installed at the Signal Corps Laboratories at Fort Monmouth, N.J., and one at White Sands Missile Range, N Mex.

Senate Confirms Dr. Larsen as Secretary of the Army (R&D)

(*Continued from page 1*)

his appointment was confirmed by the U. S. Senate on Aug. 11, as a Consultant for R&D to Secretary of the Army Elvis J. Stahr, jr.

Born in Bergen, Norway, and moved with his parents to the United States when he was six years old, Dr. Larsen spent his boyhood on a farm in southwestern Minnesota. He holds a Bachelor of Education degree (1939) from Mankato (Minnesota) State Teachers College, an M.S. degree in Physics (1941) from Drake University, and a Ph.D. degree in Physics (1948) from Iowa State College.

Starting his scientific career with Minneapolis Honeywell Co. in 1948 as a Research Physicist, Dr. Larsen became Director of Ordnance Engineering in 1952, was promoted to Director of Research in 1953, and was elected Vice President in Charge of Research in 1959. In the latter capacity he directed the central research laboratory and worked with management in providing program guidance.

During three years as an officer in the Navy, World War II, Dr. Larsen was stationed in Washington to work on design of radar-type equipment. His technical experience includes service as a Consultant to the Army Ballistic Research Laboratories, Aberdeen Proving Ground, Md., and membership on the Army Signal Corps R&D Advisory Council.

Dr. Larsen is known also for his work as a member of the Maritime Research Advisory Committee of the National Academy of Sciences, the Minnesota Atomic Development Problems Committee, Minnesota State Board of Education Advisory Committee on Nature and Problems of Science and Mathematics Education, and Minn. Nuclear Operations Group.

Professional affiliations of Dr. Larsen include membership in the American Physical Society, Institute of Radio Engineers, the Atomic Industrial Forum and the Industrial Research Institute.

Mrs. Larsen is the former Valerie Josephine Pletz of Lakefield, Minn. They have two daughters and a son.

Cross-Country Mobility Studied by U.S., U.K., Canadian Experts

Cross-country mobility is the theme of a conference and study tour of the Tripartite Working Group on Ground Mobility that began in Washington, D. C., Aug. 28.

Composed of 40 U. S., British and Canadian research experts on soil-vehicle relationships, the Group held business sessions at the Pentagon before starting a tour of Army R&D installations. Included in the tour are the Transportation Research Command at Fort Eustis, Va., the U. S. Army Engineers Waterways Experiment Station, Vicksburg, Miss., the Yuma Test Station, Ariz., and the Land Locomotion Laboratory, Detroit.

Arranged by the Tripartite Research Coordinating Committee, the conference is the third held by the Group. Maj Gen William J. Ely, Director of Army Research, welcomed the conferees at the Pentagon and Maj Gen Frank S. Besson, Jr., Chief of Transportation, addressed them. Richard C. Kerr, Chief Scientist of the Transportation Corps, is U.S. chairman of the Working Group.

Former Army Research Chief in Europe Heads Smithsonian Science Information Exchange

Dr. Monroe Edward Freeman, internationally known clinical chemist and former Chief of the Army Research Office-Europe, Office of the Chief of Research and Development, became Director of the Science Information Exchange, Smithsonian Institution, Washington, D. C., Sept. 1.

As successor to Dr. Stella Lesche Deignan, who resigned after serving as Director since the Exchange was established 11 years ago, the son of Dean Emeritus Edward M. Freeman (deceased) of the University of Minnesota will take over a substantially expanding program.

The Science Information Exchange serves and is supported by seven major Government agencies—the Department of Defense, the National Institutes of Health, National Science Foundation, Atomic Energy Commission, National Aeronautics and Space Administration, Veterans Administration, and Federal Aviation Agency.

Responsible for providing information to help supporting agencies avoid unknowing duplication of effort, the Exchange also receives a vast amount of material from cooperating fund-raising agencies and private foundations. As of April 1960, it was a clearinghouse of information on some 30,000 active research projects.

Started as a Medical Information Exchange within the National Research Council–National Academy of Sciences, the unit broadened its activities in 1953 to include the biological and psychological sciences. It was renamed the Bio-Sciences Information Exchange and moved to the Smithsonian Institution. Further growth was reflected when it became the Science Information Exchange in September 1960. Its stated mission is:

"To foster and facilitate effective planning and management of scientific research activities supported by United States agencies and institutions by promoting the exchange among participating agencies of administrative data about all types of current research. This process will include the accumulation, organization, analysis and distribution of pertinent information and data concerned with all types of research within the scope of the Science Information Exchange."

Activities of the Exchange were expanded in 1960 by addition of a Physical Sciences Division and in July 1961 by a Life Science Division. Newly assigned as Associate Director for Life Sciences is Dr. David F. Hersey, formerly on the staff of the Armed Forces Institute of Pathology, Walter Reed Army Institute of Research, Washington, D. C.

As the new Director of the Science Information Exchange, Dr. Freeman is backed by broad professional experience and has been recognized by election to high office in national and international scientific organizations. He is the author of some 50 papers presented to scientific conferences or published in professional journals.

Graduated from the University of Minnesota with B.S., M.S., and Ph.D. degrees, Dr. Freeman was an assistant professor of biochemistry at the University of Maine from 1930 through 1936 and a professor of chemistry at the University of Massachusetts from 1936 to Sept. 1942.

Following three years of military service, during which he progressed to the rank of Major, he returned to the University of Massachusetts as a professor of organic chemistry until he was reassigned to the Walter Reed Army Institute of Research in 1948.

Reassigned to the Office of the Chief of Staff in September 1953, as a Research Coordinator, Dr. Freeman remained in Washington until he was ordered to Frankfurt, Germany, to become Commanding Officer and Chief of the newly established Army's European Research Office.

Dr. Monroe Edward Freeman

In 1957 he was returned to the U.S. for a year of treatment at Valley Forge General Hospital, following which he served three years as Commanding Officer and Chief of the Army Research Office—Europe. From April 1960 until he accepted his new job Dr. Freeman served as a full Colonel, Office Deputy Assistant Director for General Research, Advanced Research Projects Agency, Office of the Secretary of Defense.

Elected in 1960 to a 4-year term as President of the International Commission of Clinical Chemists, International Union of Pure and Applied Chemistry, Dr. Freeman is serving his second 4-year term as a member of IUPAC.

Other professional affiliations include the American Chemical Society, Washington Academy of Science, American Assoication for the Advancement of Science, Society for Experimental Biology and Medicine, American Association of Clinical Chemistry (as President in 1954), and the American Board of Clinical Chemistry (certified specialist).

Authors Given Deadline on Narrative Summaries for Science Conference

(*Continued from page 1*)

from other sources should be submitted to the Army Research Office, Office of the Chief of Research and Development, ATTN: Dr. Richard A. Weiss, Deputy and Scientific Director.

In 1959 a total of 21 papers, including several prepared by two or more authors, were selected for presentation of honoraria and Certificates of Achievement signed by Lt Gen Arthur G. Trudeau, Chief of Research and Development. Similar awards will be presented at the 1962 Conference. All of the papers will be published in widely disseminated reports of the proceedings.

General Trudeau has stated that he desires papers presented at the 1962 Conference to reflect adequately the scope, depth and overall quality of the Army's widely dispersed and diffused research activities.

Subject material of proposed papers may be classified through SECRET but cannot contain any restricted or formerly restricted data. Only papers reporting on original work performed in Army Research and Development installations will be considered by judges.

Sponsored by the Chief of Research and Development with assistance from the Army Research Office, the Army Science Conference has four main purposes:

- To provide Army scientists an opportunity to make presentations on their work to a distinguished gathering of the Nation's scientists for critical review and discussion.
- To stimulate more closely integrated teamwork by bringing senior scientists together in an atmosphere conducive to improved understanding and cooperation through discussion and association.
- To encourage a knowledgeable appreciation within the outside scientific community, through reports of proceedings, of the depth and scope of the Army scientific program.
- To enhance the exchange of information in related fields on a continuing basis.

As was necessary for the three previous Army Science Conferences, all held at the United States Military Academy, quotas will be established for each of the participating agencies within the maximum of 500 attendees.

Though the majority of participants will be Army military and civilian personnel, representatives are expected from the Department of Defense, the Departments of the Air Force and the Navy, the National Bureau of Standards, National Academy of Sciences, Atomic Energy Commission, National Aeronautics and Space Administration, National Science Foundation, and the United Kingdom and Canada.

Expedition Into Panamanian Jungle Unites All Technical Services in Research

Research teams representative of all the Army Technical Services will embark this month on a 60-day scientific expedition into the dense jungles of Panama aimed at improving military transportation and communication techniques in the tropics.

OPERATION SWAMP FOX, being conducted with the sanction of the Government of Panama, which has in the past permitted similar projects by the U.S. Government, is routed through several hundred miles of primitive jungle, much of it along the proposed route of the Pan American Highway.

Conducted by 30 officers and men from the U.S. Army Transportation Board at Fort Eustis, Va., the project is supported by scientists, engineers and technicians from the Ordnance Corps, Signal Corps Quartermaster Corps, Chemical Corps, Army Medical Service, Corps of Engineers and the Infantry Board.

Members of the expedition will attempt to penetrate the jungle from Chepo to El Real, through the Darien Gap, with various types of Army and commercial vehicular and communications equipment. Aerial resupply will be flown by two H-34 helicopters assigned to the Transportation Board and one U-1A Otter aircraft.

Geared to an expanded tropical research program announced recently by Lt Gen Arthur G. Trudeau, Chief of Research and Development, SWAMP FOX is a followup of TROPICAL WET, a project conducted in Panama during the rainy season in November 1960.

Expected to contribute importantly to the transportation aspects of the current project is the Canadian-developed "Jungle Trac," which was redesigned following its limited use in the 1960 project.

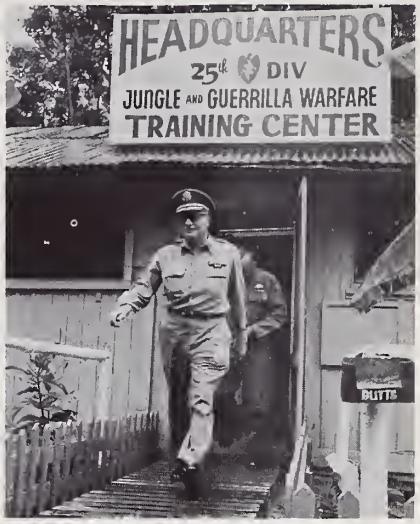
Army equipment to be evaluated during the expedition includes the M-1 1,000-gallon Rolling Liquid Transporter, the M-113 Armored Personnel Carrier, the T-116 tracked amphibious cargo carrier, and several standard Army trucks of varying capacities. Some of the trucks will be equipped with newly developed tires.

Methods of helping aircraft to locate surface elements beneath the jungle canopy will be tested, and studies will be made of physiological and psychological reactions of personnel to extreme tropic conditions.

Medical personnel from the U.S. Army Medical Research Laboratory, Fort Knox, Ky., are among the specialists teams assisting in the analysis and evaluation of equipment, personnel reactions, and clothing used in SWAMP FOX.

Scheduled to return to the United States on Nov. 25, members of the expedition arrived in Panama in August and underwent survival training at the Jungle Warfare Training Center at Fort Sherman, Canal Zone, before starting on the scientific project.

On visit to Fort Richardson, Alaska, Lt Gen Arthur G. Trudeau, Chief of Research and Development, (center) is briefed by Capt Thomas U. Harrold, 1st Battle Group, 23rd Infantry, and Col Herbert C. Hicks, Battle Group Commander, at Eklutna Glacier training area. Behind General Trudeau are Maj Gen J. H. Michaelis, Commanding General, U.S. Army Alaska, and Elmer Rasmuson, civilian aide to Secretary of the Army Elvis J. Stahr, jr.



Lt Gen Arthur G. Trudeau

Trudeau Explains Program In Far East, Pacific Areas

Intent on two objectives—briefing leaders of field troops on the Army Research and Development Program, and getting ideas from them regarding improvement of combat equipment and materiel—Lt Gen Arthur G. Trudeau made a 3-week Pacific and Far East area tour in July.

In his first visit to the U.S. Army Pacific Command as Chief of Research and Development, General Trudeau gave 17 briefings to more than 4,500 field officers and key enlisted personnel. He also held discussions with and/or briefings for senior military leaders of Japan, Formosa, Korea, Okinawa, The Philippines, Vietnam, and Thailand.

More than $1 billion annually is being spent by the Army on research and development alone, General Trudeau emphasized in his briefings. About one-sixth of this sum, he said, is devoted to basic research.

Stressed also by General Trudeau was the large portion of he Army R&D budget being used on human factors engineering—the designing of equipment to insure that the ever-increasingly complex weapons systems under development are still simple enough for soldiers to operate.

Among the high points of his tour were demonstrations by troops in Hawaii, Headquarters of the 25th Infantry Division Jungle and Guerrilla Warfare Training Center, and in Alaska where he observed mountain operations.

1961 Edition of Problems Guide Lists R&D Areas in Which Army Seeks Aid

Revised editions of the 8-volume Army Research and Development Problems Guide, more than 11,000 copies of which were distributed in response to requests when it was introduced a year ago, are expected to be ready for dissemination in mid-September.

Lt Gen Arthur G. Trudeau, Chief of Research and Development, announced availability of the 1961 Problems Guide at the 1961 Annual Meeting of the Association of the United States Army which opened in Washington, D.C., Sept. 6.

Outlined in the Guide, General Trudeau said, are problems the solution of which "can very substantially help this Nation in its need to be as strong in the face of tomorrow's danger as it was on the battlefields of yesterday."

Each of the Technical Services and the Army Research Office has prepared one volume of the Guide, describing a total of more than 1,000 problem areas in which the Army is inviting assistance from industry, educational and nonprofit institutions.

Four of the eight volumes are free of security restrictions. Past users of the Guide should request the 1961 edition and use it exclusively, since it contains many new problems and eliminates those no longer applicable.

Distribution of Vols. I-VVII of the Guide is made by the appropriate Technical Services. Industry requests for copies must include proof of security clearance, if required, and a statement of the company's research capability in the field covered by the requested volume.

Distribution of Volume VIII is made by the Army Research Office. It contains a compilation of basic and applied research problems taken from the other seven volumes, plus other research problems, and has been prepared for distribution to educational and other nonprofit institutions.

Requests should be addressed to:

VOLUME I (SECRET and UNCLASSIFIED) — Commanding General, U.S. Army Chemical Corps, Research and Development Command, Building T-7, Gravelly Point, Washington 25, D.C.

VOLUME II (CONFIDENTIAL and UNCLASSIFIED) — Commanding General, U.S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va.

VOLUME III (UNCLASSIFIED) —Commanding General, U.S. Army Medical Research and Development Command, Main Navy Building, Washington 25, D.C.

VOLUME IV (SECRET and UNCLASSIFIED)—Letter should be sent to the Ordnance District closest to the addresser from the following:

- Commanding Officer, Birmingham Ordnance District, 2120 North Seventh Avenue, Birmingham, Ala.
- Commanding Officer, Boston Ordnance District, Boston Army Base, Boston 10, Mass.
- Commanding Officer, Chicago Ordnance District, 209 West Jackson Boulevard, Chicago 6, Ill.
- Commanding Officer, Cincinnati Ordnance District, Swift Building, 230 East Ninth Street, Cincinnati 2, Ohio.
- Commanding Officer, Cleveland Ordnance District, Lincoln Building, 1369 East Sixth Street, Cleveland 14, Ohio.
- Commanding Officer, Detroit Ordnance District, 574 East Woodbridge, Detroit 31, Mich.
- Commanding Officer, Los Angeles Ordnance District, 55 South Grand Avenue, Pasadena, Calif.
- Commanding Officer, New York Ordnance District, 770 Broadway, New York 3, N.Y.
- Commanding Officer, Philadelphia Ordnance District, 128 North Broad Street, Philadelphia 2, Pa.
- Commanding Officer, St. Louis Ordnance District, 4300 Goodfellow Boulevard, St. Louis 20, Mo.
- Commanding Officer, San Francisco Ordnance District, 1515 Clay Street, P. O. Box 1829, Oakland 12, Calif.

VOLUME V (UNCLASSIFIED)—Commanding General, U.S. Army Quartermaster Research and Engineering Command, Natick, Mass.

VOLUME VI (CONFIDENTIAL and UNCLASSIFIED)—Commanding Officer, U.S. Army Signal Research and Development Laboratory, Fort Monmouth, N.J.

VOLUME VII (UNCLASSIFIED) —Commanding Officer, U.S. Army Transportation Research Command, Fort Eustis, Va.

VOLUME VIII (UNCLASSIFIED)—Research Support Division, Army Research Office, Office, Chief of Research and Development, Department of the Army, Washington 25, D.C.

ERDL Chemist Wins Secretary of Army Fellowship

A man who 20 years ago was a $60-a-month teacher in Georgia has learned by experience the broad avenue to achievement and self-improvement offered to scientists by the Department of the Army.

He is Maryland D. Kemp, an analytical chemist employed since 1957 at the U.S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va., who has just been awarded a Secretary of the Army Research and Study Fellowship.

Mr. Kemp's 12-month fellowship will take him to the University of Bristol in England, where he will engage in research and study of the solution of kinetics and their application to crystal growth.

A Civil Service Career Scientist backed by 18 years' Federal service, the 42-year-old fellowship winner is now a GS-13 with a salary of $10,895 a year. He served at the Naval Powder Factory, Indian Head, Md., from December 1942 to January 1957.

Employed by the War Department at the Indiana Ordnance Works, Charlestown, Ind., from February 1942 to December 1942, Mr. Kemp served with the Office of the Chief of Ordnance, Washington, from October 1941 to February 1942 and the Library of Congress, Washington, from April to October 1941.

Graduated in 1940 from Johnson C. Smith University, Charlotte, N.C., with a bachelor of science degree *magna cum laude*, Mr. Kemp received a master's degree in chemistry from Howard University, Washington, in 1959, and is now working toward a Ph. D. degree. He served a term as a teacher after receiving his B.S. degree.

Maryland D. Kemp

The Secretary of the Army's Research and Fellowship Program was established in 1956 to enable outstanding Army civilian employees to devote full-time, off-the-job study and research on Army problems.

While enhancing the reputation of the Department of the Army as an employer, the Fellowship program is designed to:

(a) Uncover and support basic creativity and encourage creative attitude problems.

(b) Provide a means of studying and doing research on Army projects identified at the point where need for projects is recognized.

(c) Stimulate and aid outstanding career employees in their efforts toward self-development by substantially increasing the number of developmental opportunities available to those whose potential has been proved by achievement and purpose.

(d) Emphasize the discovery, development, and increased use of the best talents available among the Department of the Army career civilians.

Deputy CRD Curbs Changes Increasing Lead Time, Cost

Maj Gen Dwight E. Beach, Deputy Chief of Research and Development, recently initiated action designed to curb the lengthening of lead time or increased cost of military items under development through changes proposed while such items are in the development cycle.

General Beach gave notice of his intent in a memorandum to the Directors of Army Research, Development, Plans and Management, and Special Weapons. The memorandum, titled "Changes to Military Characteristics," said:

"The MRRC (Materials Requirements Review Committee) Lead Time Study has definitely indicated that one of the major contributors to lengthening lead time and to increased cost is constant changes to the item after it has started its development cycle.

"A recent example is the 'in process' committee recommendation that the MC's for a certain type of tractor, which were approved in May of 1960, be changed to include armor plate for the driver.

"I desire that all Directors closely scrutinize proposed changes to MC's if they affect either the lead time or the cost and, if either is increased, that the change be cleared with me."

HFE Conference Focused on Man-Machine Problems

Problems related to man-machine compatibility will occupy attention of some 300 scientists, engineers, technicians and supervisors at the seventh Army Human Factors Engineering Conference, Oct. 3-6, at the University of Michigan.

Under the auspices of the Army Signal Corps, the conference is expected to attract representatives of all the Army Technical Services, industrial firms interested in Army R&D, educational institutions, all branches of the Department of Defense, and other Government agencies.

An essential part of the Army Chief of Research and Development's program to further Army-wide coordination of the human factors engineering effort among all interested commands, staffs, and service agencies, the annual conference has for its stated purposes:

- To provide direct exchange of information on human factors engineering among personnel of U.S. Army development agencies, and between these and representatives of user agencies and other qualified individuals.
- To provide recommendations and suggestions to be followed up by the Army Human Factors Engineering Committee to assure exploitation of all opportunities for improving man-machine compatibility in the design of Army materiel.
- To provide a conference report which will serve as a useful, complete, and authoritative compendium of current work programs and related information concerning all Army human factors engineering, R&D activities.

Planning for the conference and follow-up action on its suggestions and recommendations are the responsibility of AHF Engineering Committee.

WRAIR Technique Speeds Detection of Parasites

Rapid detection of blood and tissue parasites of man and animal is possible with a new vital staining technique developed at the Walter Reed Army Institute of Research.

Importance of the discovery, a WRAIR official said, is apparent to all who are concerned with the well-being of the soldier through prompt treatment of parasitic diseases, including many exotic and bizarre diseases troops have experienced in foreign lands during and after World War II.

A striking application of the new staining techniques, which uses acridine orange and related dyes, has been the demonstration, for the first time, of stained microfilariae in the circulating blood of dogs. Presence of a disease known as "canine microfilariasis" is thus simply diagnosed.

Expanded use of sentry dogs within the U.S. military security system, and the possibility of transmission of their diseases to man, makes rapid detection and diagnosis of disease in these animals particularly important.

Human filarial parasites, such as those causing elephantiasis, may be just as easily detected in whole blood preparations.

The great versatility of the new vital staining has made it a valuable tool in related fields of medical research, according to the WRAIR report. It promises to be useful in studies of the effect of drugs, antibiotics and chemicals on cells or on parasites.

Prolonged direct microscopic observations also are possible with the technique, which has facilitated observation of reactions of white blood cells.

Because the method permits detection of blood parasites at low magnification, it may be applied to large-scale field surveys and to epidemiologic studies of disease, including fungus organisms.

Studies by the WRAIR Division of Veterinary Medicine in collaboration with the National Institutes of Health are said to have proved the value of the vital standing technique as a tool for study of living parasitic protozoa.

Simplicity of the new diagnostic technique is said to give it special significance for the world's population living in areas where the scourge of malaria is still endemic.

Dr. Siple Selected for Cultural Exchange Tour

Selected under the U.S. State Department cultural exchange American Specialists Program, Army Research Office Scientific Adviser Dr. Paul A. Siple, geographer and world-renowned Antarctic authority, is spending four months in Australia, New Zealand and India.

As explained by the State Department, Dr. Siple will engage in a series of conferences with key scientists and professional leaders in the countries he is visiting to "help present the image of America in specialist areas." His tour began in Australia early this month and will take him to New Zealand in October. He will spend November and December in India.

In carrying out his mission Dr. Siple will work out of United States embassies in each of the host nations, in cooperation with Cultural Affairs officers, to give lectures and answer questions of scientists, engineers, and administrators.

Dr. Siple, according to the State Department, was invited to make his tour at the suggestion of scientists interested in his long career of polar exploration, particularly as Scientific Leader at the South Pole Station during the International Geophysical Year. His book, *90° South*, is being translated into the Indian (Hindi) language because of the high degree of interest evidenced in India.

Under the State Department American Specialists Program and also under provisions of Public Law 48, many top-ranking U.S. scientists are visiting foreign lands to broaden cultural understanding.

For example, Dr. Joseph Kaplan, Chairman of the U.S. national committee for the International Geophysical Year, scored a notable success recently in Near East countries when he presented the National Academy of Sciences "Planet Earth Series" of lectures and films on the IGY.

Dr. Paul A. Siple

Another outstanding U.S. scientist, 1960 Nobel Prize winner in Physics Dr. Donald A. Glaser, of the Lawrence Radiation Laboratory, University of California, has made a State Department tour of many European countries and is scheduled for trips to Japan and the Far East.

Dr. Siple began his career with Admiral Byrd's first Antarctic expedition (1928-30) when he was selected from thousands of Boy Scouts to make the trip as a 20-year-old dog driver, biologist and naturalist. Since then he has spent 4 winters and 10 summers in Antarctica.

In recent years he has amassed a long list of honorary degrees from universities, citations from the Department of the Army for exceptional civilian service, and recognition from American geographical organizations, the Royal Geographic Society of the United Kingdom and the Royal Danish Geographic Society. He served as president of the Association of American Geographers, 1959-60.

HumRRO Projects 27 Research Tasks for Fiscal 1962

Investigations to improve training methods, motivation leadership, and man-weapon systems analysis are projected in the Fiscal Year 1962 Work Program of the Human Resources Research Office, George Washington University.

Twenty-seven research tasks, several of which will continue from the past year, are assigned to the central office in Washington, D.C., and five HumRRO field units operated in conjunction with the U.S. Continental Army Command.

Recommended by the Army Human Factors Research Advisory Committee (AHFRAC) and approved by Lt Gen Arthur G. Trudeau, Chief of Research and Development, the work program is apportioned as follows:

TRAINING METHODS DIVISION: Located in Washington, D.C., this group offers technical advisory service on training problems. Its tasks are FORECAST, concerned with training requirements of future electronic weapon systems; JOBTRAIN, building training programs for Signal Corps electronics repairmen; ADVANCE, obtaining advance indications of tactical training necessary for future Army organizations; METHOD, involving specific training problems; CONTACT, a study of automated foreign language training to enable frontline soldiers to get limited tactical information immediately from prisoners of war.

U.S. ARMY ARMOR HUMAN RESEARCH UNIT: Stationed at Fort Knox, Ky., this group is charged with three tasks. ARMORNITE is concerned with human factors in armor operations under conditions of limited visibility. TRAINCREW deals with methods for improving tank crew performance. SPANOCON is a study of human elements influencing span of control within military organizations. Exploratory studies are being conducted on broad application of research findings and management of Army training.

U.S. ARMY LEADERSHIP HUMAN RESEARCH UNIT: This unit at the Presidio of Monterey, Calif., will continue two tasks. NCO deals with training of potential noncommisioned officers; FIGHTER is concerned with factors related to combat performance. Three new tasks are: TRANSITION, human and organizational factors affecting civilian-to-military adjustment of recruits; RAID, a study of methods to improve effectiveness of small groups under stress; QUIZ, research on psychological techniques for facilitating and countering interrogative processes. The unit also responds to requests from Army agencies for consultation on problems related to NCO training, high-level leadership, and preparation of American soldiers for contact with foreign cultures.

U.S. ARMY INFANTRY HUMAN RESEARCH UNIT: Researchers in this Fort Benning, Ga., unit are continuing three tasks: RIFLEMAN, concerned with methods of improving efficiency of light weapons infantrymen; SWINGSHIFT, a study of methods of enhancing performance of individual soldiers and small units in operations when visibility is limited; OFFTRAIN, involving the training of junior officers for leadership. Additional studies are related to the increasingly complex problems infantrymen may encounter in modern war.

U.S. ARMY AIR DEFENSE HUMAN RESEARCH UNIT: Operating at Fort Bliss, Tex., this unit is continuing five tasks and beginning another. In progress are: TEXTRUCT, a study of improved methods of instruction in technical training; SAMOFF, an analysis of job and training requirements for Air Defense missile officers; UPSTREAM, dealing with procedures to anticipate training requirements for future weapons systems; MAINTRAIN, a study of Air Defense maintenance training; VIGIL, aimed at methods of improving performance of missile operators. COMSTAFF, a new task, involves research on performance of officers in Air Defense systems. The group also provides advisory and consultation service to the Air Defense School and the Air Defense Board at Fort Bliss as well as the Combat Surveillance and Target Acquisition Training Command at Fort Huachuca, Ariz.

U.S. ARMY AVIATION HUMAN RESEARCH UNIT: Four tasks will be continued by this unit at Fort Rocker, Ala. LIFT relates to methods of training helicopter pilots and INTACT is a study of contact-instrument training for Army pilots. LOWENTRY seeks improved navigation training methods for low-level flight. OBSERVE is a study of methods for training aerial observers. The unit also is making exploratory studies on the role of Army aviation on the battlefield of the future. It works closely with Aviation Center organizations, including the Aviation School and the Aviation Board.

Under supervision of the HumRRO central office in Washington, D.C., Task PIONEER will be concerned with fundamental studies of methods and concepts in training and instruction to increase the organization's long-range capability for applied research.

Signal Corps Opens Huge Battery Test Facility

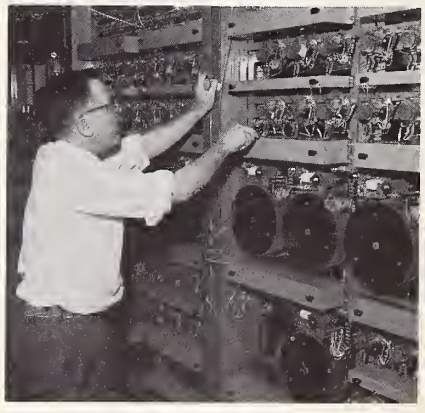
The largest known automatic dry battery test facility in the world, with a capacity of testing 17,280 batteries at one time, has been placed in operation by the U.S. Army Signal Materiel Support Agency at Fort Monmouth, N.J.

The Signal Corps will utilize the $1,250,000 facility to test production samples of some 20,000,000 batteries purchased each year for the Army, Navy, Air Force, and Marine Corps. These tests will be run at the rate of 12,000 a month.

Scientifically accurate tests will seek to improve the reliability of batteries used by the Armed Forces. Besides new production lot samples, batteries to be tested include those exposed for extended periods to heat, cold, humidity, shock, vibration and other punishing environments.

The new facility has its own tropical storage room with a capacity of 50,000 batteries. The room's temperature is maintained at 113° at 50 percent relative humidity. Environmental cold chambers elsewhere are used to store batteries under frigid conditions.

The equipment was designed, built and installed by the Austin Co. of New York City.



Engineer adjusting programer that controls the 17,280 test circuits of Signal Corps' new Automatic Battery Test Facility at Fort Monmouth.

ASAP to Study Canadian R&D At Quebec Meet Oct. 15-17

The Army Scientific Advisory Panel (ASAP) will meet Oct. 15-17 at the Canadian Armament Research and Development Establishment, Quebec.

Dr. Finn J. Larsen, Assistant Secretary of the Army (R&D), Lt Gen Arthur G. Trudeau, Chief of Reearch and Development, Dr. Murrough P. O'Brien, new Chairman of ASAP, and Dr. Harold C. Weber, Chief Scientific Adviser, OCRD, discussed present and future activities of ASAP at a meeting in mid-August.

Secretary of the Army Elvis J. Stahr, jr., Dr. M. P. Crawford, Mrs. Crawford.

Secretary Stahr Confers Honors on Dr. Crawford

Secretary of the Army Elvis J. Stahr, jr., recently presented the Distinguished Civilian Service Medal to Dr. Meredith P. Crawford, Director of the Human Resources Office (HumRRO), the George Washington University.

Recognized "for outstanding contributions to the U.S. Army from 1951 to the present," Dr. Crawford received the medal—the highest decoration awarded by the Secretary of the Army to non-career civilian personnel—on July 31, the tenth anniversary of HumRRO. The citation accompanying the medal said, in part:

"Dr. Crawford has been responsible for the conduct of significant studies in the fields of training, motivation, leadership, and man-weapons analysis, and has consistently made it possible for the Army to utilize the latest information available on the frontiers of psychological and educational knowledge.

"His professional attainments as a researcher and educator, his administrative ability, and his dedication to the objectives of the United States Army have combined to make Dr. Crawford's achievements during the past decade clearly exceptional, reflecting credit upon both the military service and the scientific community."

In recommending award of the medal to Dr. Crawford, Chief of Army Research and Development Lt Gen Arthur G. Trudeau said:

"The HumRRO organization today is essentially the reflection of the professional ability and the patriotic dedication of its first and only Director, Dr. Crawford.

"He served as a psychologist in uniform during World War II, attaining the rank of Lieutenant Colonel in the Army. After several post-war years as Dean of Arts and Sciences at Vanderbilt University, Nashville, Tenn., he accepted the opportunity of participating in the establishment of HumRRO. In this assignment he has brought to bear his graduate training at Columbia University, his experience as a professor, a researcher, and an administrator, his understanding of the military service, and his unflagging energy.

"Dr. Crawford's service during the past 10 years, a period when he was not directly employed by the Army, has resulted in substantial contributions to the accomplishment of Army-wide research, development, and training missions."

Dr. Crawford received his A.B. degree from Vanderbilt University in 1931, his M.A. from Columbia University in 1932 and a Ph.D. from Columbia in 1935. He served as a research assistant at Yale University, 1934-1939; instructor in psychology, Columbia, 1939-1940; assistant professor, associate professor, and professor, Vanderbilt, 1948-1951, and Dean of the College of Arts and Science, Vanderbilt, 1945-1951.

The HumRRO Director is a member of the board of directors and treasurer of the American Psychological Association, and a member of Phi Beta Kappa and Sigma Xi.

Army Awards $80 Million On PERSHING Contracts

Award of more than $80 million for PERSHING missile system contracts was announced early in August by the Department of the Army.

Two contracts, totaling more than $70 million, call for completion of the test program, now in its advanced phase, and subsequent production of missiles for delivery to combat units. Work is being done by the Martin Co.'s Orlando Division, Fla., under the technical direction of the Army Ballistic Missile Agency (ABMA), Redstone Arsenal, Ala.

A $10,495,000 contract awarded to the Eclipse-Pioneer Division of the Bendix Corp. includes procurement of components for the missile's guidance system and industrial engineering services in the quality assurance area.

Credited by ABMA leaders with the finest flight test record of any research and development missile fired at Cape Canaveral, the PERSHING is being developed to replace the liquid-fueled REDSTONE.

Powered by two solid-propellant rocket motors, the PERSHING gives field armies nuclear fire support. An internal guidance system enables the PERSHING to deliver a nuclear warhead with extreme accuracy under any condition of weather or visibility.

The entire PERSHING firing unit is transported on four tracked vehicles, capable of speeds up to 40 miles an hour. With its own communications equipment, mobile power control pack and power supply, PERSHING can roam throughout a wide battle area independent of any other units, yet go into action in just minutes when ordered to do so.

Commenting on the new contracts Maj Gen August Schomburg, Commanding General, Army Ordnance Missile Command, said:

"We have been following an accelerated plan since the program was initiated and are highly gratified that this schedule has been maintained."

Dr. Finan Accepts New Post, Receives Citation From CRD

Recognition for 10 years of service came to Dr. John L. Finan, Deputy Director for Research, Human Resources Research Office, George Washington University, when Lt Gen Arthur G. Trudeau, Chief of Research and Development, recently presented him a Certificate of Appreciation.

The award was made prior to Dr. Finan's departure in August to accept a new position in Berkeley with the California State Department of Public Health. Dr. Finan, the citation stated, "has served as a key professional psychologist.

"Through his unusual combination of scholarly attainments and military understanding, Dr. Finan has contributed significantly both to the high professional quality of the research program in morale, motivation, leadership, and man-weapons system analysis, and to the effective utilization of HumRRO's research findings and recommendations by the Army."

Ballistic Missile Defense Studies Reported

Results of feasibility studies of a Field Army Ballistic Missile Defense System, made over a 10-month period by 20 of the Nation's leading industrial firms under Department of the Army contracts, were reported in August at Redstone Arsenal, Ala.

Approximately 400 key employees of the Army Technical Services, Office of the Chief of Research and Development, Department of the Army, other Government agencies and contract firms participated in the closed sessions, classified in the interest of National Security.

Briefing presentations were made by six teams representative of the firms involved in the studies conducted for the Army Rocket and Guided Missile Agency. Teams reported on findings of the following contractors:

The Raytheon Co. with Northrop Corp. and International Business Machines, Inc.; Pomona Division of General Dynamics with Burroughs and Westinghouse; General Electric Co. with Chrysler Corp.; The Martin Co. with Maxson Electronics Corp. and Remington Rand, UNIVAC Division; Sylvania Electronic Systems with Aeronutronics, a division of Ford Motor Co., and General Telephone and Electronics Corp.; Hughes Aircraft Co. with Goodyear Aircraft Co., North American Aircraft Co.; R. G. Le Tourneau, Inc., and Aerojet General.

Rate Gyroscope Test Yields Measurements on Missiles

Rate gyroscopes were used for the first time to make direct measurements of launcher beam angular velocity in the pitch and yaw planes in a recent test firing from an HONEST JOHN launcher at White Sands Missile Range, N. Mex.

Rock Island Arsenal research and development engineers used the gyroscopes as a first step in a program aimed at deriving more useful data on launcher dynamics. It is believed this application of rate gyros may offer several advantages over other forms of instrumentation.

Since these instruments are spatially independent, they do not require stationary support structures which usually are bulky, difficult to erect and time-consuming to handle. In addition, much of the data reduction and analysis performed on test firings may be eliminated, since the output of the rate gyro is the final information required.

Investigation will be continued at Rock Island Arsenal, with particular emphasis on the use of gyroscopic devices to measure the dynamic behavior of the Ordnance weapons designed and developed by the Research and Development Division.

Portable Atom Gun Extends Metal Testing Capabilities

Use of a portable Cobalt-60 energy source to produce radiographs of metal parts has extended the testing facilities of the Metals Engineering Section of the Technical Services Laboratory at Picatinny Arsenal.

The portability of the Cobalt-60 energy source permits its use in field operations, such as determining the position of the arming mechanism of an ammunition item that fails to fire as scheduled. The unit can also be used to test castings, forgings and other materials to discover the presence of cracks or conditions which might cause defective performance of ordnance items.

The Cobalt-60 source was obtained specifically for X-raying items that could not be examined by conventional equipment because of bulk or dangerous characteristics.

In the Arsenal's testing work, a tiny pellet of Cobalt-60 is used. The metal items to be examined are usually placed within 10 feet of the radioactive source, with the X-ray film on the outside. Exposure ranges from five seconds to a half hour or more, depending on the bulk and density of the test item. Radiographs taken in this manner have penetrated up to one inch of steel.

Army Awards TITAN Contract

The Army Corps of Engineers Ballistic Missile Office, Los Angeles, Calif., has awarded a $37,700,000 contract to Paul E. Hardeman, Inc., and Fishback and Moore, Inc., of Stanton, Calif., for construction of TITAN facilities at Little Rock Air Force Base, Ark.

The TITAN is an intercontinental missile intended to deliver a nuclear warhead more than 5,500 nautical miles.

Army Gains SS-11 System Permit

A license agreement signed by the Army permits manufacture in the United States of the SS-11 antitank guided missile system designed and manufactured by NORD Aviation of Paris, France.

The SS-11 System is a remote-controlled, wire-guided missile with a solid-fuel propellant. The agreement provides that the United States shall benefit by all improvements to the SS-11 for the next 10 years.

Honor Graduate

Commendably representative of enlisted scientist trainees and technicians, and the increasingly important role they are filling in Army Research and Development, Sfc Vincent P. Meno recently was selected the Honor Graduate of the Nuclear Emergency Test Team Course at the Atomic Energy Commission School in Nevada.

Assigned to Aberdeen Proving Ground, Md., he has the responsibility of Nuclear Weapons Assembly Adviser with the Strategic Army Corps Ordnance Group.

A veteran of action with the 40th Infantry Division in Korea, Sfc Meno was an education major student at the University of Florida until he joined the Army in 1951. He is a native of Guam.

New Training Missile Hailed For Altitude, Speed Ranges

Acclaimed as the only training target missile capable of operating from 300 to 60,000 feet altitude, and from subsonic to supersonic speeds, the Army's new NA 273 (Redhead Roadrunner) recently performed successfully in its first firing test.

The NA 273 flew a low-level mission at White Sands Missile Range, N. Mex. Under control of a ground command post, the ramjet-powered missile blasted from a standard launcher for the Army's LITTLE JOHN rocket and was recovered intact.

Only one foot in diameter and 19 feet long, it is equipped with stubby triangular 6-foot wings and will be used as a target for the U.S. Army Air Defense Command crews firing HAWK and NIKE HERCULES air defense missiles.

North American Aviation is prime contractor for development of the missile. The Army Rocket and Guided Missile Agency, an element of the Army Ordnance Missile Command at Redstone Arsenal, guides the program.

RAC Takes Over Major Part of Army Operations Research

Operation research, an area of mounting importance to Army Research and Development, is now a prime responsibility of the Research Analysis Corporation, a newly established nonprofit research organization headed by Frank A. Parker, Jr., formerly Assistant Director of Defense (R&E), Office of the Secretary of Defense.

Under terms of an Army contract signed by Dr. Finn J. Larsen, Assistant Secretary of the Army for Research and Development, effective Sept. 1, the Research Analysis Corporation will assume a major portion of operations research for the Army. Dr. Larsen stated:

"The new contract will give the Army a greatly increased potential for scientific inputs for short- and long-range as well as mid-range planning."

Headquartered in suburban Washington, D.C., the Research Analysis Corporation (RAC) is staffed with scientists experienced in the operations research area. RAC currently employs 450 scientists, technicians and administrative personnel.

RAC's present staff makes it the largest operations research group in the Washington area. Doubling of the present staff within the next five years is envisioned by President Parker.

Currently 34 percent of the staff are in the humanities area, 25 percent in the Physical Sciences, 24 percent in mathematics and 17 percent in engineering, including 140 classified as operations analysts. More than half of the analysts had five or more years experience with the Operations Research Office (ORO).

Initially, RAC will complete the unfinished studies conducted by ORO under a Johns Hopkins University contract. ORO was dissolved effective Aug. 31

Top-ranking Army planners have assisted in the organization of RAC which, Mr. Parker said, offers the flexibility and growth potential necessary to meet the complete range of Army operations research requirements.

Assistant Secretary of the Army (R&D) Dr. Finn J. Larsen is shown approving an Army research contract with the Research Analysis Corp., Bethesda, Md. Observing are Frank A. Parker, Jr., RAC President, and Maj Gen William J. Ely, Director of Army Research, Office of the Chief, Research and Development.

NIKE ZEUS Guidance Meets Test in Underground Firing

In the first firing of a NIKE ZEUS anti-missile-missile from an underground cell, major items of the missile system's guidance equipment recently performed successfully in a firing test at the White Sands Missile Range, N. Mex.

The principal elements tested were in the NIKE ZEUS command guidance system, designed to track and guide the missile in a completely automatic operation.

The underground launch concept was previously demonstrated utilizing a modified version of the earlier ZEUS missile design. The underground cell is a prototype of the launcher planned for operational use in the missile defense system.

Brig Gen John G. Zierdt, Commander of the Army Rocket and Guided Missile Agency, said the test marked another significant achievement in the NIKE ZEUS development program.

"We have successfully demonstrated," he said, "that the ZEUS system guidance equipment is fully capable of controlling the missile."

Missile Test Stand Embodies Climatic Unit

Featured in a new Army vertical missile test stand is a climatic chamber capable of temperature ranging from 85° below to 185° above zero F.

Located on a bluff overlooking the Tennessee River, the Redstone (Ala.) Arsenal facility was built for the Test, Evaluation and Firing Laboratory of the Army Ballistic Missile Agency (ABMA) on a 540-acre test area. Constructed to support the Army's PERSHING missile program, the versatile test stand permits almost every conceivable type of experiment, short of flight, for missiles ranging in size to the JUPITER IRBM.

Eighty-eight feet tall, the test stand has twin missile mounts to permit side-by-side simultaneous or sequential firings. The climatic chamber enables missilemen to precondition a missile and maintain that condition after putting the missile in a vertical position for firing. A huge door which forms the floor of the chamber is rolled away to clear the way for the missile blastoff.

Because Army missiles must operate under a variety of temperature conditions, ability to maintain missile motors under a desired temperature to conduct captive firings is important for research purposes.

Incorporation of a high-altitude simulator on the test stand is planned to permit tests simulating conditions up to 80,000 feet. Protection against the high temperatures of rocket engine exhaust gases is provided by a deflector cooled by the flow of 16,000 gallons of water a minute.

Connecting the instrumentation and control building with the test stand is a 1,150-foot tunnel. Accommodated in this tunnel, designed for emergency passage of personnel between the two structures, is an intricate network of wiring for strip-chart recorders, oscillographs, magnetic tapes and analog-to-digital acquisition systems used in the measuring center to record results of missile tests.

Located half a mile from the test stand is the environmental building, which also has the capability of producing temperatures in a range from minus 85 to plus 185 degrees. Fifty feet long, 40 feet wide and 14 feet high, it can be used as a unit or divided into four sections to meet special testing requirements.

Grouped in the control center of the nuclear power plant at Camp Century are members of the plant's original crew: top row, left to right, M/Sgt John H. Buteau, S/Sgt Edward C. Lewandowski, Sgt/1c Tokeshi Kumagai, M/Sgt Dean W. Haugen, Sp/5 George E. Berlin; bottom row, left to right, M/Sgt Harold L. Allen, Sp/6 Charles F. Emery, Sgt Robert H. Brunson, Sgt/1c W. G. Hubacek, CWO Frank M. Hajdu, M/Sgt L. E. Lasater.

Original Icecap Nuclear Power Plant Crew Honored

Eleven of the 19 members of the original U.S. Army Polar Research and Development Center nuclear power plant crew were recently awarded Certificates of Achievement at Camp Century, Greenland. The other eight members were honored at their present duty stations in many parts of the world.

Col Gerald W. Homann, Commanding Officer of the USA PR&DC, cited their meritorious service in helping to assemble, test, install, and operate the PM-2A plant at Camp Century.

The plant was brought from Alco Products, Inc., Dunkirk, N.Y., to Thule Air Base by ship in July 1960 and transferred to Camp Century, 138 miles out on the Greenland Icecap, by the PR&DC on sleds pulled by low-ground-pressure tractors. It was put in operation the following October.

Before the men became PM-2A crew members, they had to meet stringent criteria for entry into the Army Nuclear Power Program. After selection they went through long and thorough training. The best possible crew had to be chosen because of the importance of this project to the future of the Army nuclear power program.

Both at Dunkirk, N.Y., where they helped assemble the PM-2A, and Camp Century, the crew's duties were arduous and demanding since the nuclear power plant was not a fully developed and proven concept.

The PM-2A is the first nuclear plant designed in air-transportable packages as well as the first to be designed and constructed for use under the adverse conditions of polar environment and terrain. Approximately 40 major plant modifications and many lesser changes were made as a result of crew initiative.

Army Map Service Expands Quarters at Brookmont, Md.

Additional space for the thousands of employees and numerous projects of the Army Map Service will be provided by a multimillion dollar cartographic engineering building, Albert Hall, now under construction.

When completed in December, the 5-story building will be connected to Erskine Hall, AMS headquarters at Brookmont, Md., since 1945, by corridors on the first three floors.

Col F. O. Diercks, Commanding Officer of the AMS, presided at the cornerstone laying ceremony. He has since been reassigned to the Office of the Assistant Chief of Staff, Intelligence, Department of the Army. Col Robert C. Miller, formerly Chief, Intelligence Division, Engineer Officer, U.S. Army Pacific, is his successor.

During Col Diercks' 4-year tenure at the AMS, important advances were made. One of the most ambitious projects was an effort to produce what is believed to be the first topographic map of the moon by stereophotogrammetric methods.

Redstone Civilians Establish Impressive Safety Records

Civilian employees at Redstone Arsenal, Ala., established new safety records during the fiscal year which ended June 30, working 17,471,187 man-hours with only 10 lost-time accidents.

The Army Ballistic Missile Agency, an element of the Army Ordnance Missile Command went the entire fiscal year plus 10 days, working 3,474,404 man-hours, with no time-lost accidents. The Army Rocket and Guided Missile Agency personnel worked 6,072,999 man-hours with only four time-lost accidents, while Army Ordnance Missile Support workers had six accidents during 7,650,784 man-hours.

Shell Casting Process Regarded as "Scientific Breakthrough"

Described as a "scientific breakthrough," a new process has been developed that permits casting of artillery and mortar shells from malleable iron instead of forged steel.

Maj Gen William K. Ghormley, Commanding General of the U.S. Army Ordnance Special Weapons-Ammunition Command, announced the discovery at Picatinny Arsenal, N.J. He told a news conference that a $935,000 contract has been awarded to the Albion Malleable Iron Co., developers of the process, for production of 173,800 rounds of 81 mm. shells.

General Ghormley noted that in addition to more effective fragmentation, the new process permits production with a noncritical material, making more steel available for other defense work.

To assure safety of the shell, an ultrasonic inspection device to detect and reject unsound castings was developed by Albion and Sperry-Rand. Lack of a reliable and rapid method of inspection previously had been a major stumbling block in efforts to develop an efficient production process.

Lt Col Moncrief Heads Brooke AMC Research Unit

Lt Col John A. Moncrief has returned to Brooke Army Medical Center, Fort Sam Houston, Tex., to command the Surgical Research Unit. He was Deputy Commander of the unit and Chief of its Clinical Division from 1955 to 1957.

Chief of the Surgical Research Branch of the U.S. Army Research and Development Command, Washington, D.C., for the past year, he guided research in radiation and thermal burns and in plasma volume expanders. In both fields the Surgical Research Unit he now commands has a primary interest (See December issue, pages 18-19, Brooke AMC Pioneers in Treating Burns.)

Col Moncrief served in World War II and in the Korean War. In the later he served as a Battalion Surgeon and later as Chief of Surgery of an evacuation hospital. A graduate of Emory University, Atlanta, Ga., he is a member of the American Medical Association, the American College of Surgeons, Moyer Surgical Society and Alpha Omega Alpha.

Lt Col Glew Assigned as Chief Of Medical R&D Command Unit

Lt Col Donald H. Glew, Jr., is the new Chief of the Surgical Research Branch, U.S. Army Medical Research and Development Command, with headquarters at the Army Surgeon General's Office.

Col Glew was awarded the Army Commendation Medal on July 3, 1961 for outstanding service as Chief of the Professional and Surgical Services at the U.S. Hospital at Aberdeen Proving Ground, during the past three years. He was one of the three surgeons assigned to the 7th U.S. Army Field Hospital sent to Chile following the earthquake in the spring of 1960.

A Diplomate of the American Board of Surgery, Col Glew is a member of the American Medical Association, the Association of Military Surgeons and is a Fellow of the American College of Surgeons. He is coauthor with Lt Gen Leonard D. Heaton, the Army Surgeon General, of the chapter on "Penetrating Wounds of the Abdomen" in Abdominal Surgery, a recently published book.

AFEB Names Executive Secretary

Col Charles H. Moseley, an Army Medical Service Officer with an outstanding record in preventive medicine, was recently appointed Executive Secretary of the Armed Forces Epidemiological Board in Washington, D.C. Col Moseley has been Assistant Commandant of the Medical Field Service School, Brooke Army Medical Center, Fort Sam Houston, Tex., since January 1960. He succeeds Col John Rizzolo, MC, USAF, who has just completed his tour with AFEB and is presently enroute to be 13th Air Force Surgeon at Clark Air Force Base in the Philippines.

Lt Col John S. Moncrief

Swedish Laboratory Asks Aid Of Woman Medical Researcher

Professional skill of an Army medical research technologist, Miss Margaret M. Powers of the U.S. Army Medical Research Laboratory, Fort Knox, Ky., is being used in establishment of a laboratory in Stockholm, Sweden.

The Karolinska Institute invited Miss Powers to spend approximately three months, beginning in mid-July, as a staff consultant to Dr. Yngre Horenbled. Her duties involve setting up laboratory procedures and training technicians in medical technology.

Tissue staining for microscopic work is Miss Powers' forte. She has published 14 articles dealing with staining procedures. At Fort Knox, where she has been since 1959, she has collaborated in the development of some new histochemical tests. This work is summarized by a laboratory report now on the press.

Miss Margaret M. Powers

AROD Staff Grows to Meet Recent Broadened Function

Assigned to the Army Research Office-Durham, as the first officer from a Technical Service other than the Ordnance Corps, is Lt Col Leslie G. Callahan of the Signal Corps.

The new Executive Officer is a U.S. Military Academy graduate (Class of '44) and is enrolled as a career specialist in the Army R&D and Atomic Energy Program. He received his M.S. degree in 1951 at the University of Pennsylvania and expects to get his Ph.D. degree there in 1962. During the past year he was assigned to the University of Michigan Graduate School under the Army's degree completion program.

Officers from other Technical Services are being assigned to AROD, in line with a plan outlined by Lt Gen Arthur G. Trudeau, Chief of Research and Development, when the former Office of Ordnance Research was placed under the control of Maj Gen William J. Ely, Director of Army Research, effective Jan. 16, 1961.

Assigned Army-wide responsibilities for research in the Physical Sciences, AROD's staff will include professionally qualified scientist and engineer officers from each of the Technical Services. The aim is to achieve a much more effectively integrated and coordinated program representative of close teamwork among all these Army R&D elements.

Aberdeen Industrial Hygienist Takes Similar Job at Belvoir

Charles H. Borcherding, Jr., an industrial hygienist for nine years at the Army's Aberdeen Proving Ground, Md., recently assumed a similar position at Fort Belvoir, Va.

Assigned to the DeWitt Army Hospital, he will work out of the Occupational Health Unit at the U.S. Army Engineer Research and Development Laboratories. He will monitor and supervise an industrial hygiene program not only for the Laboratories but other units of the Army Post.

Mr. Borcherding attended the Johns Hopkins University, and has completed courses in basic and advanced radiological hygiene and reactor environmental health problems at the Robert A. Taft Sanitary Engineering Center of the U.S. Public Health Service. He is a member of the American Industrial Hygiene Association, the Health Physics Society, and the American Conference of Governmental Industrial Hygienists.

Dr. Lamanna Named ARO Life Sciences Deputy Director

Dr. Carl Lamanna, former Scientific Director and research bacteriologist at the Naval Biological Laboratory, University of California, is the new Deputy Director and Scientific Adviser of the Life Sciences Division, Army Research Office.

The 44-year-old Deputy to Col T. E. Huber, Director of the Life Sciences Division, was associated with the Naval Biological Laboratory nearly four years before joining the ARO. Earlier he served at Johns Hopkins University for nine years as associate professor of microbiology.

A native of New York City, Dr. Lamanna received his B.S., M.S., and Ph.D. degrees from Cornell University. After receiving his doctor's degree in 1939, he taught bacteriology and public health for a year at Washington State University, and the following year at Oregon State University. From 1942 to 1944 he was on the medical faculty of the Louisiana State University. From 1944 to 1948 he served as a civilian employee with the Chemical Corps at Fort Detrick, Md.

At Fort Detrick he received the Meritorious Award for Exceptional Civilian Services, for work leading to the crystallization of the toxin of botulism, the first time bacterial protein had been crystallized.

Dr. Lamanna is the author of some 60 scientific papers and, with Dr. Frank Mallette, professor of agricultural and biological chemistry at the Pennsylvania State University, wrote *Basic Bacteriology*, a textbook for advanced students in universities and graduate schools in the United States and abroad.

Dr. Carl Lamanna

While with Johns Hopkins, Dr. Lamanna spent a year as visiting professor of microbiology at the Institute of Hygiene of the University of the Philippines. This service was part of a rehabilitation program carried on by the University of the Philippines and Johns Hopkins under the sponsorship of the World Health Organization and the Rockefeller Foundation.

Dr. Lamanna has also taught microbiology during summer sessions at the University of California at Berkeley and the University of Washington, Seattle.

Stationed at the Army's Arlington Hall Station, Arlington, Va., Dr. Lamanna resides in Arlington with his wife and a son and daughter.

Experimental Portable X-Ray Helps Save Man's Life

How an experimental, portable flash X-ray unit being developed for the Army was used to save the life of a man who keeled over, apparently dead, is reported by Ross Floyd, a project engineer.

Lady Luck, through a rare combination of circumstances, gave a major assist to the victim, Ernest Parrish, who was stricken while enjoying a steak in a restaurant in McMinnville, Ore. When he slumped from his chair, two physicians, Dr. Weldon Ross and Dr. James Wilbur, happened to be attending an American Medical Association meeting in an adjoining room.

Summoned for help, the physicians diagnosed Parrish's condition to be the result of a chunk of steak lodged in the trachea. They performed an emergency operation with a pen knife and a short length of plastic tubing.

Serious complications soon became evident. Though the doctors kept the patient alive by externally massaging his heart, they realized that the time required for movement to a large X-ray machine for diagnosis might prove fatal.

Fortunately, Dr. Ross remembered that the Fields Emission Corporation, just a couple of blocks away, was developing the portable X-ray unit for the Army, and that it could take a chest X-ray in 1/1000th of a second. A hurried call brought the machine to the scene and it revealed noxious air and blood in the lungs. Prompt treatment saved Parrish's life.

McMinnville, population 7,700, is believed the only community in the U.S. where such portable flash X-ray equipment is available.

State-of-the-Art Reviewed In Low-Speed Aeronautics

State-of-the-art of low-speed aeronautical research was reviewed recently at a symposium in Boston sponsored by the Army Transportation Corps Advisory Panel and the Massachusetts Institute of Technology.

Subjects discussed included research related to materials and structures, low-speed aeronautics, viscous flow problems, rotor airloads and aeroelastic effects, propulsion, sound suppression, downwash impingement, handling qualities, use of Army technology in civil applications, and cost reduction.

Maj Gen D. E. Beach, Deputy Chief of Research and Development, represented the Office of the Chief of Research and Development, and Maj Gen R. B. Lincoln, Jr., Deputy Chief of Transportation, represented the Office of the Chief of Transportation.

Others who attended included members of the Physical Sciences and Air Mobility Divisions of OCRD, members of the R&D Directorate of the Office of the Chief of Transportation, TRECOM personnel, members of the TC Advisory Panel, the MIT staff and Princeton University staff.

VanAtta Succeeds Haseman As Director of GIMRADA

Assignment of Col Leonard L. Haseman to the National War College, Washington, D.C., for a year of study beginning in August set the stage for Col Ward H. VanAtta to succeed him as Director of GIMRADA (Geodesy, Intelligence, and Mapping Research and Development Agency), Fort Belvoir, Va.

GIMRADA was organized under the command of Col Haseman in August 1960, as a principal field agency of the Corps of Engineers. Col VanAtta was graduated from the Army War College, Carlisle Barracks, Pa., immediately prior to his assignment as GIMRADA Director.

Col Leonard L. Haseman

Scientific Calendar

Fall Instrument-Automation Conference and 16th Annual Meeting, sponsored by the Instrument Society of America, Los Angeles, Calif., Sept. 11-15.

7th International Conference on Cosmic Rays, Kyoto, Japan, Sept. 11-15.

International Cloud Physics Conference, Canberra and Sidney, Australia, Sept. 11-21.

Aeronautical Systems Division, AF Systems Command Materials Symposium, Phoenix, Ariz., Sept. 13-15.

DOD Symposium on Electronic Warfare, sponsored by the Department of the Navy, Stanford Electronics Laboratory, Stanford University, Calif., Sept. 13-15.

9th Annual Engineer Management Conference, sponsored by AIEE and ASME, N.Y.C., Sept. 14-15.

6th Symposium on Neuroradiologium, International Congress of Meteorology, Rome, Italy, Sept. 18-22.

Industrial Electronics Symposium, sponsored by AIEE, Boston, Mass., Sept. 20-21.

Conference on Radiofrequency Spectroscopy in Solids, sponsored by Physical Society, Solid State Group & Radio-Frequency Spectroscopy Group, Bangor, Wales, Sept. 21-22.

33rd International Congress, Chemical Industry, Bordeaux, France, Sept. 21-30.

International Conference on Magnetism & Crystallography, Kyoto, Japan, Sept. 25-30.

International Congress of Aviation & Cosmonautical Medicine, Paris, France, Sept. 26-30.

Adhesives Symposium, Picatinny Arsenal, Dover, N.J., Sept. 27-28.

Navy R&D Clinic, sponsored by Department of the Navy, University of New Mexico, State of New Mexico, New Mexico State University, Raton, N. Mex., Sept. 28-29.

12th Colloquium of International Geophysics Association, Salzburg, Austria, Sept. 28-29.

13th International Congress on Plastics, Turin, Italy, Sept. 28-30.

Applied Glaciology Symposium, sponsored by Navy Civil Engineer Laboratory, Bureau of Yards & Docks and Geophysics Research Directorate (AFCRL), Dedham, Mass., scheduled (undated) in Oct.

7th National Communications Symposium, Utica, N.Y., Oct. 2-4.

Technical Committee 61 on Plastics of International Organization for Standardization, Turin, Italy, Oct. 2-7.

12th International Astronautical Congress, sponsored by the American Rocket Society, Washington, D.C., Oct. 2-7.

Symposium on Physics and Nondestructive Testing, Argonne, Ill., Oct. 3-5.

Joint Solid Fuels Conference, sponsored by ASME, American Institute of Mining, & Metallurgical & Petroleum Engineers, Inc., Birmingham, Ala., Oct. 5-7.

16th Plastics-Paper Conference, sponsored by the Technical Association of the Pulp & Paper Industry, French Lick, Ind., Oct. 9-11.

National Electronics Conference, sponsored by AIEE and IRE, Chicago, Ill., Oct. 9-11.

1961 Space Flight Report to the Nation, New York, N.Y., Oct. 9-15.

Conference on Application of Digital Computers to Automated Instruction, sponsored by ONR and System Development Corporation, Washington, D.C., Oct. 10-12.

30th Symposium on Shock, Vibration & Associated Environment, sponsored by Office of Director of Defense, R&E, Detroit, Mich., Oct. 10-12.

2nd Conference on Nuclear Reactor Chemistry & 5th Conference on Analytical Chemistry in Nuclear Reactor Technology, Gatlinburg, Tenn., Oct. 10-12.

14th Annual Gaseous Electronics Conference, Schenectady, N.Y., Oct. 11-13.

National Symposium on Engineering Writing & Speech, Michigan State University, E. Lansing, Mich., Oct. 16-17.

International Conference on the Ionization of the Air, Philadelphia, Pa., Oct. 16-17.

Technical Aeroballistics Symposium, sponsored by BuWeps. White Oak, Md., Oct. 16-18.

International Conference on the Metallurgy of Beryllium, sponsored by the Institute of Metals, London, England, Oct. 16-18.

General Meeting & Congress of the International Organization for Vacuum Science and Technology, Washington, D.C., Oct. 16-19.

National Conference on Industrial Hydraulics, sponsored by the Armour Research Foundation and the Illinois Institute of Technology, Chicago, Ill., Oct. 19-20.

East Coast Aerospace & Navigational Electronics Conference, Baltimore, Md., Oct. 23-25.

By Dr. Ralph G. H. Siu, Technical Director, R&E, OQMG

There have been many deliberations and meetings held, as well as books and papers published, on management, on the stimulation of creativity, on the laying out of programs, on better results through improved administrative procedures, on the development of new concepts, and so on.

Now all this is fine and, I believe, we can well profit from giving these topics some sober attention.

It seems to me, however, that we may be catering too much to the prophets of symbolic knowledge. **There is a need to sort out those with merely a symbolic knowledge of R&E from those with an intimate knowledge.**

The difference between symbolic and intimate knowledge is illustrated by the case of Mr. Braenzs.

Mr. Braenzs can tell you all about the characteristics of humor; he can describe the difference between a joke, a conundrum, a witticism, a jest, a banter; he can name all the comedians who have played on Broadway over the last 30 years; he can delve into a long dissertation on the psychology of humor, on the conditions conducive to joking, on the energy dissipation involved in a smile, a laugh and a guffaw, and so on. But he can't crack a joke himself!

Such a character may be said to have a symbolic but not an intimate knowledge of humor.

It would be appropriate, in view of the many misquotes ascribed to Confucius by my worthy colleagues, to celebrate the 50th issue of T-Thoughts with a few honest-to-goodness "Confucius Says" of some relevancy to R&D management.

1. Confucius said, "A person who loves learning is better than the man who knows it, and the man who finds happiness in it is better than the man who loves it."

2. Confucius said, "Not to teach a man who is capable of learning is a waste of a man. To attempt to teach a man who is incapable of learning is a waste of words."

3. When Wen Chi said that he always thought three times before acting, Confucius said, "To think twice is good enough."

4. Confucius said, "Can you ever imagine a petty person as a high official? Before he gets the post, he is anxious to get it. After he gains it, he is anxious about losing it. When he becomes anxious about losing it, there is nothing he will not do to keep it."

5. Confucius said, "To talk (to a sovereign) before you are invited is called 'impulsiveness.' To fail to talk when you are requested is called 'lack of candor.' To talk without noticing the sovereign's mood is called 'blindness.'"

6. Confucius said, "The goody-goodies are the thieves of virtue."

Army Research Recognized in World Conferences

Recognition of research performed by Army R&D personnel is indicated by many requests to present papers before international conferences.

Army scientists accepted invitations to share their findings with foreign colleagues at August and September conferences in the Soviet Union, Japan, Italy, Sweden, Germany, Belgium, France, and other countries.

For example, at the Fifth International Congress of Biochemistry, held in Moscow Aug. 10-16, five Army scientists participated. Fred E. Hahn, Jennie Ciak and Alan David Wolfe of the Department of Molecular Biology, Walter Reed Army Institute of Research (WRAIR), presented a paper on the "Mode of Action of Streptomycin." William J. Campbell of WRAIR and Walter Frajola of Ohio State University discussed "An Investigation of the Deoxyribonucleic Acids from Leucocytes in Leukemia."

Robert M. Chapman, also of WRAIR, discussed "Kappa EEG Rhythm and Learning," at the Fifth International Congress of EEG and Clinical Neurophysiology at Rome Sept. 7-13.

John F. Christian, of the Army Engineer Research and Development Laboratories, Fort Belvoir, Va., selected "Ergonomics—Palliative or Definitive?" for a presentation at the First International Congress on Ergonomics in Stockholm Aug. 20-23.

Two scientists linked with Army research performed at the Lincoln Laboratory, Massachusetts Institute of Technology, will present papers at the International Conference on Magnetism and Crystallography, to be held at Kyoto, Japan, Sept. 23-30. Donald O. Smith will discuss "Positive and Negative Anisotropy in Nickel-Iron Films" and T. A. Kaplan has selected as his subject the "History of the Effects of Anisotropy on Spiral Spin-Configurations with Application to Rare Earth Metals."

Engineer Adapts Kitchen Blender to Biological Study

"Improvise, man, improvise!" used to be the constant command of the topkick to raw recruits confronted with problems for which no Army equipment was readily available.

That policy has paid off for Milton A. Frank, Sr., a mechanical engineer at the U.S. Army Chemical Corps Biological Laboratories, Fort Detrick, Md.

Gifted with a good idea while fishing on the Potomac River, Mr. Frank adapted a kitchen blender, one of those useful little gadgets of modern living, into a leak-proof apparatus for fluidizing diseased tissues. Thus he eliminated one of the hazards confronting scientific and technical personnel employed in the biological laboratories.

Dr. Arnold G. Wedum, Safety Director of the Laboratories, termed Frank's idea a simple solution to a problem which had stumped commercial engineers. Involved was the design of a drive shaft similar in construction to that used in a washing machine, drilling of four one-eighth inch holes in the outer casing, and the installation of a stainless steel bowl, teflon-sealed bearing unit and an airtight lid.

Granted a patent on his first invention nearly 10 years ago, Mr. Frank has since developed other modifications which have made his device useful in many of the Nation's laboratories today.

As the old topkick used to say, "You have to think, man! Think! Think! Think!"

Milton A. Frank, Sr.

Life Begins, Again, at 70 For Fort Belvoir Retiree

Retired at the age of 70 after more than 20 years in Government service, Harry Springer has cast aside the life of ease and is back on the same job at the same place from which he "retired"—the U.S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va.

As a reemployed annuitant hired for a specified time, he is a supervisory general engineer in the Industrial Engineering Branch. Branch Chief Lowell H. Barnett said Mr. Springer's experience and skills are needed in processing engineer design drawings for production and use in procurement of engineer military equipment.

Mr. Springer entered Civil Service in April 1939 as a tool and gauge designer with a group hired to assist in reactivation of the Alexandria Torpedo Station, later renamed the Naval Ordnance Plant, Alexandria, Va.

APRD Pilots Aid Map Service Perform Task for Air Force

Interservice cooperation at the "top of the world" was illustrated recently when seven members of the U.S. Army Polar Research and Development Air Section left Camp Tuto, Greenland, in two helicopters on a 6-week support mission for the Army Map Service (AMS).

Purpose of the mission was to fly a 12-member AMS mapping team 9,000 nautical miles along the eastern and western coasts of southern Greenland. Stops at predesignated points were made to permit astronomic and gravity observations from the ground. Fuel and oil caches were dropped in advance.

The AMS team undertook the task for the Military Air Transport Service of the U.S. Air Force to supplement high altitude radio navigation points previously obtained by the Air Force.

With good weather, the task was expected to be completed by the end of August.

15 ERDL Employees Receive Cash Awards Totaling $2,300

Cash awards aggregating $2,300 were presented recently to 15 men and women at the U.S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va., in recognition of their fine work performance and for beneficial suggestions.

"Sustained Superior Performance" awards and cash were presented to Willie J. Daniels, $100; Mrs. Liselotte J. Dean, $100; Mrs. Edna T. Beard, $100; Mrs. Ruby K. Heflin, $150; Mrs. Zelma M. Harms, $200; Ernest Earman, $200; David Cotrona, $200; Raymond G. Lank, $200; Earl A. Crouse, $250; James E. Griffin, $250; Harry C. Smith, $250; William H. Baer, $250.

Beneficial suggestion awards were presented to Justice E. Hawks, Mrs. Charlotte W. Ridgeway, and Carl L. Morrison.

Ex-EM Scientist Earns Ph.D. Degree Hard Way

Graduate studies in night school and Saturday courses for more than three years paid off for Dr. Edward J. Poziomek, Protective Division, U.S. Army Chemical Research and Development Laboratories, when he recently was awarded a Ph. D. degree in organic chemistry from the University of Delaware.

First assigned to the Laboratories when he entered the Army in 1956 under the Enlisted Scientific and Professional Personnel Program, following nearly two years as a research chemist with the Hooker Electrochemical Co., Dr. Poziomek was retained as a civilian employee when he completed his tour of duty in 1958.

Patience, mostly on the part of his wife and two small daughters, Dr. Poziomek admitted, helped carry him through the period of after-duty studies. Holder of a B.S. degree in chemistry from Rensselaer Polytechnic Institute, N.Y., he received his M.S. degree in the same field from the University of Delaware in 1960.

During his period of enlisted service, Dr. Poziomek received an invention award and a citation jointly with Dr. G. M. Steinberg and Dr. B. E. Mackley, Jr., for having participated in outstanding Chemical Corps research.

Author of a number of scientific papers published in professional journals and Government reports, Dr. Poziomek is a member of the American Chemical Society, the Wilmington (Del.) Organic Chemists Club, the Edgewood (Md.) Civic and Improvement Association, and was recently elected to full membership in the Sigma Xi honorary scientific society.

Dr. Edward J. Poziomek

Fort Detrick Unit Aids Researchers Design Apparatus

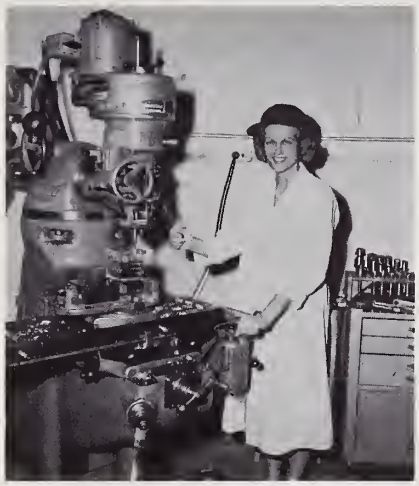
By Carl O. Swenson, Engineering Technician, Mechanical
U.S. Army Biological Laboratories

Assistance to scientific and technical personnel troubled with design and construction problems pertaining to experimental research apparatus is a function of the Mechanical Subsection, Physical Sciences Division, U.S. Army Biological Laboratories.

Researchers at the Fort Detrick, Md., installation are provided advice on proven methods, procedures and techniques for design and construction of apparatus, instruments and fixtures in the fields of mechanics, heat, sound, light and electricity.

Services of the Subsection may be applied to development of optical and scientific photographic equipment, electrical testing and measuring apparatus, standard and high-speed motion picture cameras, tracking scopes and telescopes, range finders, sound recording equipment, calibrating, sealing, testing and collimating devices.

In aiding researchers to solve problems, the Subsection provides technical skill and training in shop practices such as cutting, forming, bending, broaching, spinning, burnishing, perforating, swedging, surfacing and micro-finishing of equipment, so that routine operations may be handled independently.



Mrs. Carolyn F. Bryan, employee in the Mechanical Subsection, Army Biological Laboratories, supports research with products of her skill as machinist.

Army Awards $9,528,639 In Missile Work Contracts

Three contracts totaling $9,528,639 were awarded recently by the Department of the Army, covering work on components for two missile systems and for target missile flight service.

Northrop Corp. Northronics Division was awarded a $3,957,124 contract for production of launchers for the HAWK air defense guided missile system and a $2,999,986 contract to furnish warhead components for the Army's SERGEANT ballistic missile.

Northrop's Radioplane Division received a $2,571,529 contract to provide flight service for the RP-76 target missile. The targets are provided for training firings of Army air defense guided missiles, conducted on ranges near El Paso, Tex.

SERGEANT missile work is under the technical supervision of the Army Ballistic Missile Agency at Redstone Arsenal, Ala. The HAWK system and target missiles are under technical supervision of the Army Rocket and Guided Missile Agency at Redstone.

OCE R&D Director Promoted To General, Moved to Korea

Col John D. Cole, Director of Research and Development, Office of the Chief of Engineers, Washington, D.C., was promoted to the grade of brigadier general and reassigned to Eighth Army, Korea, effective in August. He was Deputy Army Engineer, Eighth Army, Japan and Korea, from 1949 to 1951.

A graduate of the U.S. Military Academy at West Point, class of 1935, he served during World War II in North Africa and Italy, as Commanding Officer, 310th Combat Engineer Battalion of the 85th Infantry Division, and later as Commanding Officer, 19th Engineering Combat Group of the II Corps in Italy.

From 1946 to 1949 he was an Instructor at the Command and General Staff College, Fort Leavenworth, Kans. After his Eighth Army assignment he attended the Army War College, Carlisle Barracks, Pa., 1951-52.

He was assigned to the Office of the Chief, Legislative Liaison, Department of the Army, Washington, D.C., from 1952 to 1954. During that assignment he attended in 1953 the Advanced Management Program, Harvard Business School, Cambridge, Mass. He then became an Instructor in the Army Management School, Washington, serving from 1954 to 1955.

Col Johnston Named Chief Of R&D Division, OCSigO

Col J. Wilson Johnston has been appointed Chief of the Research and Development Division, Office of the Chief Signal Officer, succeeding Brig Gen John C. Monahan, who has been reassigned to Korea.

A native of Seattle, Wash., Col Johnston is a graduate of the University of Oregon. He entered on extended active duty in 1941 and held Intelligence assignments during World War II, one as Administrative Officer of the Army's Signal Security Agency. From 1946 to 1949 he served with the Army Security Agency in Tokyo.

Col Johnston has also served on the Staff and Faculty of the Command and General Staff College, Fort Leavenworth, Kans., and as Chief of the Plans and Training Branch, Signal Division, Supreme Headquarters Allied Powers Europe (SHAPE).

Prior to his present assignment Col Johnston served for nearly three years as Deputy Chief of the Research and Development Division in the Office of the Chief Signal Officer. He is a graduate of the U.S. Army Signal School Advanced Officer Course, the Command and General Staff College, and the Industrial College of the Armed Forces. His awards and decorations include the Legion of Merit.

Col Carlson Awarded Medal For PERSHING Missile Aid

Lt Col John H. Carlson has been awarded the Army Commendation Medal for the manner in which he performed his duties as Research and Development Coordinator for the Engineer Corps components of the PERSHING Missile System at the Martin Co., Orlando, Fla.

Col J. H. Kerkering, Director of the U.S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va., presented the medal at a ceremony held prior to Col Carlson's departure for a new assignment with the 97th Engineer Battalion in France.

A 1944 graduate of the U.S. Military Academy, West Point, Col Carlson earned his master's degree in electrical engineering at the University of California in 1953. He completed the Engineer Officers Advanced Course at Fort Belvoir in 1954, and was graduated from the Command General Staff College in 1957.

Fuel Cells Parley Slated

Air (oxygen) electrodes of fuel cells will be the subject of a round table discussion by contractor representatives at a meeting of the electro-chemical working group of the Interagency Advanced Power Group to be held at Wright Patterson Air Force Base Sept. 28.

30-Year Army Career Scientist Cites Government Service Rewards

By Dr. Harold A. Zahl, Director of Research, U.S. Army Signal Research and Development Laboratory

Early in 1931, during my final oral examinations at the University of Iowa, I was asked by one committeeman, "Zahl, why did you elect to study physics?"

Had I said, "Professor, I studied physics because through such studies I hoped to make my maximum contribution to mankind," the committee would have smiled and thought me naive.

Had I said, "I studied physics, since as a profession, I thought it would pay very well," the committee would have laughed loudly for in that day physicists were among the lowest paid of any professional group.

My reply was "I studied physics because I saw more fun in life that way than anything else I could think of."

The committee collectively smiled in favor of my reply and, after three hours of technical questioning, unanimously agreed that I had won my Ph.D. . . . and then everyone had fun!

Today if someone asked, "Doctor, why have you stayed so long in Government science," perhaps the best reply would also be a "fun answer" similar to the one I gave 30 years ago, but now adding also "excitement."

Surely, an answer along the lines of "most service to the Nation" would not ring completely sincere for all the years of relative peace and security. During the depression, all jobs, particularly Government, were at a premium. Today there are many ways physicists can help strengthen our defense and work toward preserving our way of life.

Without too much imagination, I could even picture myself now as a $50,000 per year Director of Research with some industry serving our defense needs with great effectivenes, simultaneously living in a big house, having hired help for the Missus, owning three cars and putting all my children through college without borrowing. I could picture, too, serving the Nation's defense as a frugally living, low-salaried professor in a small college training our future scientists.

But I mentioned fun and excitement. Here are a few highlights of this type of attraction to show you what I mean. Within our Laboratory, our personnel played a major role in the invention and development of radar. We opened up the space age by first bouncing radar echoes off the moon. The first human-voice messages received from any satellite came from equipments made in our Laboratory; Projects Courier and Advent followed.

Experimentally, we have changed nature's weather habits and we were the first to observe global cloud cover from satellites. Our people have participated in every U.S. atomic explosion. Our scientific teams have traveled the world over many times. The electronic components we have deve'oped are the building blocks for many of the Nation's electronic systems. Thousands more of illustrations like these might be cited.

In unclassified research, our people, in the past five years, have published over 1,000 important scientific articles. They have made numerous presentations before the learned technical societies. Patents for internal inventions developed for Government use are now issued routinely. Two of our people received a $10,000 Army Incentive Award for the invention of printed circuits, and I could go on indefinitely. . . .

With this introduction, let us now take a real hard look at my subject—"Opportunities for Scientists in Federal Government." Times are changing. This being 1961, and with two growing and opposing stockpiles of H-bombs threatening each other across the ocean, it is imperative in speaking of Government service that we now also blend the word "responsibilities" with "opportunities."

In fact, since defense-supported research now almost dominates U.S. scientific effort, the scientist who primarily considers defense research monies in light of their availability for maximum personal exp'oitation and acquisition automatically puts his personal ambitions on par with or even ahead of the Nation's security.

Whether we like it or not, within the nuclear-age environment, and with man already in space, people must more and more condition themselves toward thinking, as President Kennedy stated in his inaugural address, "what can I do for our Government?" as contrasted to an attitude of "what can I get out of it?" This must be particularly true of our scientists and engineers, because taxpayers' dollars figured in billions are entrusted to them.

My subject thus changes to "Opportunities and Responsibilities for U.S. Scientists and Engineers Working for Defense." Let us thus first focus attention on the several major groupings which make up this category—directly or indirectly.

First, there are many individuals in Civil Service and in this area we shall concentrate most, but not all, of our attention. This group is paid according to laws passed by the Congress and works under regulations established by the Civil Serice Commission. The system has weaknesses but also great strength; it represents law and order. Where weak, it should be strengthened, not just criticized. What we are discussing is one aspect of how to accomplish this; specifically, how to make the Service more attractive to more of our Nation's top technical people.

Growing rapidly is a second category of defense scientists who are contract employees. For example, the Institute for Defense Analysis hires scientists to work side by side with Civil Service and military personnel. These people sometimes are, but not necessarily, more competent than their Civil Service and military associates; but the salary scales are much higher and they are not subject to any strict regulatory rules. There are consultants, too, who generally work part time with payments following a somewhat fixed legal pattern. Contract employees and consultants generally have permanent employment interests elsewhere, from which they are asked to disinterest themselves when serving in a Government capacity.

Then there is a third group of people working entirely with Government support, but again outside of the controls which characterize Civil Service. The Atomic Energy Commission long ago established the pattern with their efforts at Brookhaven, Livermore, Oak Ridge, Los Alamos, etc. Here some corporate structure, industry, or educational institution accepts long-term contracts; Government funds pass directly to their workers.

Related to this pattern, we also find a category of contract effort which grew from year-to-year contracts with various military services but now have extended to almost permanent type of operations. These contracts include university-operated facilities at MIT, Columbia, Harvard, Illinois, Stanford, California, California Institute of Technology, Michigan, Johns Hopkins and many others. In each of these, the contractor agency sets the policy regarding salary, etc.; some pay quite high, others conform quite closely to the rigid pattern of the particular school having the contract.

The latest arrival in the area of Government support is best typified by new organizations such as MITRE and the Aerospace Corporation, both supported by the U.S. Air Force.

Let me quote from the latest Aerospace recruitment advertisement for personnel: "To preserve our free institutions, it is absolutely essential that the United States find the most effective means of advancing the science and technology of space and also applying them to military space systems. This is the mission of Aero-

Dr. Harold Zahl

Kennedy Review Seeks to Expand In-House R&D

President Kennedy has directed the Budget Bureau to determine whether the Government is capable of taking over some scientific and technical work now being done under contract, and what policies and actions are necessary to increase Government capabilities.

Budget Director David E. Bell is reviewing all facets of contracts for Government activities and will report findings to the White House by Dec. 1.

The Chief Executive told Mr. Bell that his review should indicate what policies should be adopted for controlling salaries and fringe benefits of personnel working under contracts. Mr. Kennedy said he wanted full consideration given to limitations which make direct Federal operation difficult.

The use of contracts with private institutions and enterprises has enabled the accomplishment of scientific and technical work essential to urgent public purposes, Mr. Kennedy said. He added that use of such contracts had been made necessary by the Government's entry into new fields, such as atomic energy, missile development and space exploration and the need for talents and services not previously employed.

"After a decade or more of experience with such contracts, I think it would be desirable to review the effectiveness of this means of accomplishing the Government's purposes," President Kennedy wrote.

The President noted that there should be greater flexibility in determining whether the public interest would best be served by use of a contractor or direct Government operations.

---

space . . . in accomplishing its mission, this nonprofit public service organization performs the unique role of space systems architect. . . ." Aerospace salaries are easily competitive with those paid in industry.

Then, of course, and finally, we find the normal contractual situation between defense agencies and industry wherein lies the largest group of all. In this category is much of our development and almost all of the country's military production. Here, as one would expect, we frequently find very high salaries since there is much cost-plus-fixed-fee work. Some scientists even delight in playing the game of musical chairs (job switching), as they progressively build up their own income. This is fine and great sport, of course, but as they skip around, the cost of defense goes up too.

Facing the facts, however, this is in part the fault of Government since it has the power to exert considerable control over the performance of contractors, but this takes, shall we say, a rare type of intestinal fortitude. Collectively, we seem to have an impression that if we need a new development, or hope for a scientific breakthrough, twice as much money will produce it in half the time. Thus, in trying to buy time, we find inflation forced on us as a very expensive by-product.

My summary, however, would not be complete without mentioning the growing grant system in which individual scientists working in universities are given specific grants of Federal defense dollars. While they enjoy great freedom, the fact still remains that large fractions of their support come entirely from the Department of Defense, augmented too by the National Science Foundation, the Atomic Energy Commission, or some other Government agency.

I mention these various categories of Government or quasi-Government effort since, except for straightforward industrial contracts or research grants, it is plain that there exists just outside of formal Government a growing competition which, because of higher salaries involved and greater freedom, inevitably will work toward the deemphasis of time-honored Civil Service employment, unless Civil Service can be kept attractive to top-flight scientists.

While politically, the number of people in Government does not appear to be growing, actually a comp'ete integration of all scientists and engineers working FOR Government would show an entirely different fact. More technical people now work full time for the Government indirectly than those directly on the Federal payro'l. These are the facts of life, but many people prefer to close their eyes on this point.

As a 30-year Civil Service employee I am concerned. Unless the real and direct part of Government holds its competence as Federal dollars spent for science are increased, one day we may expect to see relatively lesser talent, shall we say, "in the cashier's office"—as influential, talented, strong-minded, albeit well-intentioned people seek to draw from the national treasury with an ever-increasing blend of personal interests involved.

In fact, this can only lead to a situation by which real decisions in scientific matters pertaining to defense come less and less from those directly responsible, but stem from the people or groups not having direct governmental responsibilities.

It remains my intent to show that the opportunities for science in the Federal Government are still enormous. But in so proving, I hope also, by inference, you will see responsibility inferred for all Government-supported scientists, both in or out of Civil Service.

The first thing necessary to maintain and improve the status of science and scientists in the Federal Government is to combat the growing misbelief that if scientists are really good, they naturally would accept higher-paid, defense-supported jobs outside —"why be stupid, go where the gravy is!" some say.

Now if people believe and practice around this concept long enough, soon it will really be a fact . . . and many supervisors inadvertently contribute toward this growing mischief by feeling that the "expertness" of "unbiased" people outside of Civil Service has a higher degree of value than that which they could solicit from within their own organization.

Surely, sometimes this is true, but more often it is not. Experts, as the saying goes, apparently are never found in one's own hometown. Always they must come from beyond "the city limits." This concept must be correctly illuminated if Civil Service is to improve rather than slip backwards.

A second and almost equally important requirement is to correct the misbelief that Civil Service scientists are in competition with their outside counterparts, some of whom exist splendidly under the same general appropriations. The Nation should more openly recognize that:

1. The Government must maintain a high level of in-house scientific competence or it will gradually lose vital leadership potential. Unless within Government we continually train top-

(Continued on page 22)

Dr. Zahl Expounds Views on Keeping Top Quality Government Scientists

(Continued from page 21)

calibre leadership, and people who understand the big problem, the inevitable alternative is that too large a percentage of our leaders must become short-time employees. Some, of course, we need, for fresh viewpoints prevent stagnation. But when this percentage grows too large, nonpolitical Government policies on science and engineering upon which to base long-term plans become very difficult to develop, maintain, and administrate, since too many divergent ideas cannot be compressed into long communications channels having limited bandwidth.

2. The Federal Government operates a gigantic R&D project evaluation system through which billions of dollars are distributed to outside organizations. Unless actions taken in this huge operation are based on impartial technical judgments stemming from the best minds this country can produce, millions of dollars inevitably will be channeled into wasteful and nonproductive effort.

3. In defense, Government career scientists and their military counterparts represent the medium through which ideas inevitably must channel on their way toward becoming military equipments and systems. *We have just not yet reached the point where we can contract for the fighting of future wars,* on a cost-plus-fixed-fee basis with a guaranteed victory.

From my own personal experience, here are some of the things which kept me in Government service. Perhaps they may help in influencing others now at points of decision:

1. At first hand I have watched and participated in the making of scientific history in many fields. It is of great significance that scientists in Government are "in the ring," or at least have ringside seats to almost all the great forward steps modern technology now grinds out almost routinely. On a more personal side illustrating this point, my "first person story" on early radar alone, as published in the *Reader's Digest,* was of interest to tens of millions of readers the world over.

2. While I have only worked in Signal Corps research and development, I knew I could always shift to new lines of Government work, in keeping with any changing interests, but still retaining accumulated fringe benefits. I knew, too, if I desired to move from Fort Monmouth, I would be permitted a wide choice in selection of climate or geographical coordinates, plus choice from many other interesting variables.

3. I have worked in a defense laboratory, where I have found that the Government's problems are bigger, broader, deeper, more far-reaching, affect more people, use more equipment, cost more money, and offer the possibility of doing more for the common good than most any other type of employment. *In carrying this further, in many major problem areas, interests outside of Government generaly deal only with the bits and pieces of programs. Only when the integration is completed can the big picture be seen in composite. This thrill is almost always reserved for the man in Government directing overall programs.*

4. I have worked in an environment of scientific competence unmatched elsewhere except in our largest industries and a few of our best universities.

5. I have grown up with dedicated people, some of whom have remained and moved up in Government, while others have, after unparalleled training, moved outside to well-deserved positions of great responsibility. In Government we are proud, not critical, of people who leave the Service after having made substantial contributions, and then move to higher salaries outside. What is desired is only that a reasonable percentage of the top talent remain on for full careers—not everyone, for Government has training responsibilities, too.

6. I have been able to maintain close contact with much of the scientific world of industry, educational institutions and the nations of the Free World.

7. I have published 75 articles and been granted many patents. I have been honored by various learned societies for work done within the Civil Service environment. I have seen hundreds of others equally rewarded.

8. Dollars paid to me for service have been adequate. The Government Retirement System is the fairest and best in the world. Government health insurance policies are superb. Vacations and sick leave are most generous. Government-supported educational opportunities, career development and job growth potential are part of a well-run Civilian Career Program. (While these words indicate a relative personal satisfaction on my part, I must, however, insert that Government should definitely steepen the high end of the salary versus age curve to retain a higher percentage of the ablest people trained by Government, for our very best people in later years often find it hard to resist offers of two, three or even more times their Government salary.)

But let me put this point straight. I will not be ridiculous and ask that only top quartile college graduates enter or stay in Civil Service. I ask only that some reasonable percentage of that quartile continue to wish to find a way into Civil Service. Once in, many will stay. To those interested in bigger money, 10 years in Government science and engineering will make it even easier. The training received pays off big in outside starting salaries, going up somewhat as the square of the time spent in Government science . . . at least until wheelchair days arrive.

To those in the lower quartiles, I say Government needs some of you too, but not the entire lower 25 percent of a graduating class. Heaven help our Nation if all our in-house jobs are filled only from the lower quartiles, while the more brilliant look elsewhere, make more money, but finally end up having their lives influenced and/or controlled by those least competent to do so.

I appeal to a fair percentage of the Nation's top scientific talent to respond to the challenge of entering the long corridor of science in Government which for many will lead toward positions of great responsibility and authority. I would like to stress this point, particularly for our young doctorates, for to this important group Civil Service is not competitive salary-wise.

From key positions, regardless of how filled, will come decisions absolutely vital to this Nation's survival as large fractions of our gross national income must be manipulated for defense and our national well-being. These top positions deserve and require the best our Nation can produce.

Basic to everything, people in Government must be representative, not only of the brave, but of the wise, for in the trust they hold depends the survival of the Free World. In this hour of scientific revolution, the Nation has technological decisions to make which will influence history for a thousand years.

Many of these decisions, and most of the implementation thereof, rest in the hands of career people we have or will have in Government. Let us work toward ever improving this very important factor in our way of life, for the quality and strength of our Government can only be measured by the people therein.

Editors Thank Contributors, Discuss Submission of Suitable Newsmagazine Material

While it is conceded that the *Army Research and Development Newsmagazine* is still far short of its ultimate goals, as outlined in the masthead statement on page 2, the many accolades it has been receiving prompt the editors to reiterate a vote of thanks.

Credit is due to a great many people for the gratifying success of the *Newsmagazine* to date—many thousands of people. It is successful only insofar as it fulfills its task of reporting, factually and interestingly, on the Army R&D program—on what is being done and by whom. Consequently, every scientist, engineer, technician, administrator and assistant who helps make Army R&D newsworthy shares in whatever commendation the *Newsmagazine* receives for reporting progress.

Quite often, however, it takes a bit of doing to get scientists, engineers, technicians and top administrators to tell others what they are doing. "If I spend a lot of time reporting on what I'm doing, I have just that much less time to be doing," is a familiar lament.

In such cases, someone has to do the prodding—the spadework. Someone has to implement a positive publicity policy that produces the kind of information the *Newsmagazine* must have to appeal to its readers, and to stimulate the interchange of ideas and progress reports.

Increased responsiveness to the Newsmagazine's dependence upon contributions of material from all Army R&D activities reflects clearly the strong command level emphasis on supporting it to the utmost. Major commanders throughout the Technical Services and top administrators all along the line of Army R&D activities have earned the profound appreciation of the Newsmagazine staff for stimulating contributions of material.

Scientists, engineers and administrators, busy as they are, have found time (generally after duty hours, it is recognized) to write many by-lined articles which have helped immeasurably to establish the stature appropriate to the *Army Research and Development Newsmagazine.* Necessarily, theirs is a labor of love or devotion to duty, since no financial remuneration can be made for any material submitted for publication.

Among the features upon which the "Newsmagazine" has received favorable comment is the T-THOUGHTS column by Dr. Ralph G. H. Siu, distinguished Technical Director, Research and Engineering, Office of the Quartermaster General. Popular also are the cartoons by RWS, an R&D officer who prefers to remain anonymous. Cartoon contributions from others with a rapier wit pertinent to Army R&D activities will be welcomed by the editors.

More than a passing nod of appreciation goes also to the eminent men who have maintained a high standard of constructive thinking on Army R&D in the regular page 1 feature titled "Theme of the Month." During the months ahead it is expected that other distinguished Army and Department of Defense leaders will express their views in this column. In the future, also the Chief Scientists of each of the Technical Services will be invited to contribute to the column.

Unfortunately, as is always the problem an editor confronts in trying to keep his contributors happy, not all of the material submitted for publication can be used. A diligent effort is made to crowd as much readable information as possible into the 24 pages available each month—even to the point of resorting to smaller boldface type than is popular with readers who still dread the thought of wearing glasses.

WHAT KIND OF MATERIAL DO YOU WANT? This is the question fired almost daily at the *Newsmagazine* staff. Instructions to the long-suffering, overworked, understaffed Technical Liaison and Public Information Officers at Army R&D installations (Glory be to them! May they find peace of mind forever in the marbled halls!) have attempted to provide the answer. Several conferences also have been held with groups and individual representatives of these offices to reach a clearer understanding of how more effective cooperation can be achieved.

Difficult to make is a concise statement explaining all the types of information the Newsmagazine may or may not use, partially because of the competitive variable. Depending upon the volume and quality of the material received, the editors may have to use in some months material that would rate scarcely a passing glance in others. Then, when the horn of plenty overflows, it is impossible to use all the suitable material while it is still timely.

When possible, the *Newsmagazine* aims at a balance representative of major scientific fields as well as each of the Technical Services and other major activities operated under Army sponsorship . Admittedly, more often this is a goal than a reality, due to the variation in the amount, quality and range of subject area of material submitted by major R&D activities.

"Let's schedule a scientific breakthrough right there."

As stated in the introductory issue of the *Newsmagazine*, submissions of material are encouraged that will report on "significant gains, overall progress and objectives, views or policies of management, measures being taken to cope with problems of interest to all personnel, and accounts of how people are accomplishing their job and gaining deserved recognition."

Further guidance on the type of material desired was given by Lt Gen Arthur G. Turdeau, Chief of Research and Development, when he stated in the first issue of the "Newsmagazine:"

"My desire is that the *Newsmagazine* will be able to furnish, through the complete cooperation of all agencies and individuals concerned, the kind of information that will build pride of service, stimulate unity of purpose, and help to eliminate duplicatory or wasteful rivalry. Its aim will be to improve understanding of problems related to our mission and to foster teamwork in planning, integrating, and coordinating our program. It will reflect the Army's desire to blend its program with all of the Nation's other R&D activities, insofar as is practicable, in solving problems of building military strength expeditiously."

Careful study of the "Newsmagazine" back issues will be helpful toward improved understanding of the wide range of subject material that is suitable, the basic writing style desired, types of pictures or other illustrations, and how much space may be rated by various types of articles. The editors welcome a telephone call to discuss a proposed article or to inquire about the status of contributed material.

APG Building New Hospital

Groundbreaking ceremonies for a new U.S. Army Health Facility at Aberdeen Proving Ground, Md., took place recently on the 186th birthday of the Army Medical Corps.

The new hospital, scheduled for completion in September 1963, will be a 3-story brick building, with penthouse, having a total floor area of 84,000 square feet, and a 75-bed capacity. Wexler Construction Co. of Newton, Mass., has a $2,835,000 contract.

Fitts Takes Manpower Post

Alfred B. Fitt, recently appointed as Deputy Under Secretary of the Army for Manpower, will represent the Under Secretary in military and civilian personnel administration and manpower management, programs and operations. Responsibilities will include Army-wide personnel security, education and training. These activities cover mobilization plans as well as current operations. Mr. Fitt comes to his new post from duty with the Federal Aviation Agency.

FLARE

UNIVERSITY OF FLORIDA
3 1262 09682 8263

ARO Scientists Attend Pacific Science Parley

Two scientists of the Army Research Office, OCRD, were among the representatives of 43 countries and 13 territories attending the 10th annual Pacific Science Congress in Honolulu, Hawaii, Aug. 21-Sept. 6.

They are Dr. Paul A. Siple, ARO Scientific Adviser. and Dr. Herbert L. Ley, Jr., Acting Chief of the Scientific Analysis Branch, Life Sciences Division.

The Congress is sponsored by the National Academy of Sciences, Washington, D.C., and Bernice P. Bishop Museum, Honolulu, with the cooperation of the University of Hawaii, and the Pacific Science Association. Objectives are:

To initiate and promote cooperation in the study of scientific problems relating to the Pacific region, more particularly those affecting the prosperity and well-being of Pacific peoples; and to strengthen the bonds of peace among Pacific people by promoting a feeling of brotherhood among scientists of all the Pacific countries.

Approxmately 1,400 individuals registered for the 10th Pacific Science Congress. Some 575 represented U.S. scientific organizations, educational institutions, and Government agencies, including all the Armed Forces and the Department of Defense.

Fort Belvoir Seminar Draws Reservists From 22 States

Participants in the Fourth Annual Research and Development Seminar for Reserve Officers, a 2-week session which started July 31, included 47 Army R&D reservists from 22 States and the District of Columbia.

"The U.S. Army Research and Development Program" was discussed by Director of Army Research Maj Gen William J. Ely. Maj Gen Frederick M. Warren, Chief, Army Reserve and ROTC Affairs, spoke on "The U.S. Army Reserve Program" and John C. Broger, Deputy Director of Information and Education, Department of Defense, gave his views on "The Threat We Face."

Col John H. Kerkering, Director of the U.S. Army Engineer Research and Development Laboratories, the host installation at Fort Belvoir, Va., outlined the mision of the Laboratories.

Other speakers briefed the attendees, who were taken on tours of the various facilities, on problems related to development of Corps of Engineer equipment for modern Army needs and plans for the future.

sd

Maj Gen John A. Barclay, Army missile and space pioneer who retired recently after 30 years' service, receives Distinguished Service Medal from Lt Gen John H. Hinrichs, Army Chief of Ordnance. Attending retirement ceremony were Brig Gen John G. Zierdt (right), Commander of the Army Rocket and Guided Missile Agency, and Brig Gen Richard M. Hurst, Commander of the Army Ballistic Missile Agency, Redstone Arsenal, Ala.

Vertical test stand of the Army Ballistic Missile Agency's new test facility at Redstone Arsenal, Ala., rears 88 feet high behind William L. Grafton, Director of the ABMA's Test, Evaluation and Firing Laboratory.

Lt Gen Walter K. Wilson, Jr., Chief of Engineers, headed party of 16 on a recent visit to the U.S. Army Polar Research and Development Center at Camp Tuto, Greenland. PR&DC Commander Col Gerald H. Homann (right) was host.

Underground Detection Specialists Plan 1962 Meeting

Detection of Underground Objects, Materials, and properties is the subject of a symposium being planned by the U.S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va.

Intended as a step toward clarifying the state of this scientific specialty, the symposium is tentatively scheduled (undated) for the spring of 1962.

Stephen E. Dwornik, an employee of the Mine Detection Branch of the Laboratories, has been designated program chairman. He said it is hoped that the fields of biology, geology, geophysics, forestry, archeology, and oceanography will be represented. Papers also will be invited concerning instrument development in the visible, infrared, and radar regions of the spectrum.

"For many years," Mr. Dwornik said, "a great amount of research has been conducted by Government and private industry for detection of underground objects, materials and properties. Various organizations in many different fields of science have developed magnetic, electromagnetic, atomic, and optical techniques to solve their own particular problem.

"Because this work is conducted in many fields of science, no single literature source exists for dissemination of information. Poor exchange of information leads to duplication of effort and nonutilization of new or improved instrumentation techniques. Our proposed symposium will help to clarify the state of this scientific specialty."

Individuals interested in presenting papers (15-20 minutes in length), or attending such a symposium are requested to write to Mr. Dwornik, Mine Detection Branch, USAERDL, Fort Belvoir, on or before September 30. A short summary of a proposed paper is requested.